

Visual Impact Assessment

for

HIGHWAY 1 SOQUEL TO MORRISSEY AUXILIARY LANES PROJECT

EA 05-0F6500

05-SCR-1-PM 14.96 to 15.94

KP 24.08 to 25.65

July 2009

Prepared for:

**Santa Cruz County Regional Transportation Commission
1523 Pacific Avenue
Santa Cruz, CA 95060**

and

**California Department of Transportation (Caltrans)
District 5
50 Higuera Street
San Luis Obispo, CA 93401**

Prepared by:

Jeffrey R. Lormand
Registered Landscape Architect #3576
Project Landscape Architect

Approved by:

Robert Carr
Caltrans District Landscape Architect
Registered Landscape Architect #3473
District 5

Contents

Contents	i
Executive Summary	iv
1. Project Description and Alternatives	1
1.1 Purpose of Report	1
1.2 Description of Project and Alternatives	1
1.2.1 Project Description	1
1.2.2 Project Purpose	1
1.2.3 Project Need	1
1.3 Alternatives	4
1.3.1 Build Alternative	4
1.3.2 No Build Alternative	13
1.4 Regulatory Setting	13
1.4.1 Visual Assessment Methodology	14
1.4.2 Additional Regulations	15
2. Affected Environment	20
2.1 Project Setting	20
2.2 Landscape Units	22
2.3 Project Viewshed	22
3. Existing Visual Character	23
3.1 Existing Visual Character	23
3.2 Existing Visual Quality	26
3.3 Predicting Viewer Response	26
3.4 Existing Viewer Sensitivity	27
3.5 Existing Viewer Groups, Exposure, and Awareness	27
4. Environmental Consequences	29
4.1 Assessing Project Impacts	29
4.2 No-Build Alternative	30
4.3 Build Alternative	31
4.3.1 Analysis Overview	31
4.4 Analysis of Key Views	35
4.5 Short Term vs. Long Term Impacts	47
5. Visual Mitigation	52
6. References	57
7. List of Preparers and Contributors	59

List of Tables

1-1 Project Retaining Wall Locations	7
1-2 Project Sound Wall Locations	9
4-1 Summary of Anticipated Viewer Sensitivity per Key Viewpoint	48
4-2 Summary of Visual Quality Change per Key Viewpoint	49
4-3 Summary of General Visual Quality Change by Landscape Unit	50

List of Figures

1 Project Location and Vicinity	2
2A Build Alternative (Auxiliary Lanes Project) Schematic Drawing	5
2B Cross-Sections at Specific Locations.....	6
3 Project Wall Locations.....	9
4 Existing Bridge and Proposed Bridge Typical Cross-sections	11
5 Vegetation Removals and Re-Landscape Areas	12
6 Aerial View of Project Corridor showing location of Landscape Units	21
7 Santa Cruz Landscape Unit, Typical Views	24
8 Arana Gulch Landscape Unit, Typical Views	25
9 Key Viewpoint #1, Arana Gulch/Santa Cruz Landscape Units	38
10 Key Viewpoint #2, Arana Gulch Landscape Unit	40
11 Key Viewpoint #3, Arana Gulch Landscape Unit	43
12 Key Viewpoint #4, Arana Gulch Landscape Unit	46

Acronyms and Abbreviations

Caltrans	California Department of Transportation
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CSS	Context Sensitive Solutions
FHWA	Federal Highway Administration
Highway 1	California State Route 1
NB	Northbound
NEPA	National Environmental Policy Act
Overcrossing	Bridge over the highway
SB	Southbound

Executive Summary

The Santa Cruz County Regional Transportation Commission has proposed improvements to Highway 1 through portions of the City of Santa Cruz and portions of Santa Cruz County from approximately the Soquel Avenue Interchange to the Morrissey Boulevard Interchange to the east, covering a distance of just less than one mile. A No-Build and one Build Alternative are proposed.

Alternative: The Build Alternative would add one 12-foot-wide auxiliary lane from the Soquel Avenue on-ramp to the Morrissey Boulevard off-ramp in the northbound direction and extend a 12-foot-wide lane from about 500 feet north of the La Fonda Avenue overcrossing to the Soquel Avenue off-ramp in the southbound direction, with 10-foot outside shoulders between the Soquel Avenue and Morrissey Boulevard interchanges. An auxiliary lane extends from the on-ramp of one interchange to the off-ramp at the next interchange and is designed to separate traffic movements entering and exiting the freeway from mainline traffic. Specific major project elements include:

- One 12-foot wide northbound auxiliary lane, plus a 10-foot shoulder, from Soquel Avenue on-ramp to the Morrissey Boulevard off-ramp;
- One 12-foot wide lane from approximately 500 feet west of the La Fonda overcrossing to the Soquel Avenue off-ramp, plus a 10-foot wide shoulder;
- Retaining and Sound Walls;
- Local Street improvements between Elk Street and San Juan Avenue, new sidewalks, curb and gutter, and pedestrian ramps;
- New La Fonda Overcrossing that includes an 11-foot lane, 5-foot bike lanes, and a 6-foot sidewalk in each direction.
- Landscaping including trees, shrubs, groundcover and vines.

Regulatory Setting: This report was prepared following the guidelines established by the Federal Highway Administration's (FHWA) Visual Impact Assessment for Highway Projects (FHWA, 1981). The existing visual quality is analyzed based on three criteria: vividness, intactness, and unity. For this report Key Views were developed based on two landscape units: Santa Cruz and Arana Gulch Landscape Units.

The City of Santa Cruz has established design guidelines for several portions of the city, although none fall immediately adjacent to the corridor. Regulations aimed at preserving the visual quality of the community have been established. Common themes that emerge from the regulations and guidelines are the importance of preserving the existing vegetation and historic character. Riparian corridors also are protected through ordinances that recognize the importance of these corridors to the visual and aesthetic quality of the community. The sum of these and other efforts to preserve and protect important aesthetic elements within the community indicates that the community has high sensitivity to changes in visual quality.

Key Findings: Existing overall visual quality throughout the project limits is rated as moderate to moderately high. The entire length of the project has a well-vegetated visual character, with dense planting along some portions of the roadside, and skyline trees visible throughout. Adjacent residential and commercial development is mostly visible at the western and eastern-most ends of the project. Development, where visible tends to blend into the landscape because of intervening vegetation, landform, and viewing distance from the highway.

The proposed Highway 1 Soquel to Morrissey Auxiliary Lanes Project would result in an increase in urban character of the project corridor. In general, the proposed project would have the following visual impacts:

- The project corridor would appear larger or wider in the landscape with the addition of an auxiliary lane in each direction;
- New sound walls, retaining walls, and the larger La Fonda Avenue bridge structure would introduce new, engineered, elements into this section of the highway; and,
- There would be a net decrease in the amount of vegetation within the corridor due to reduced planting areas available after construction.

The project would result in moderate to moderately-high changes to the visual environment, based primarily on the loss of mature vegetation and the introduction of new pavement lanes, retaining and sound walls, and the larger La Fonda Avenue Bridge. Many of these changes would be visible from both the highway and the adjacent community. Away from the immediate vicinity of the highway corridor, intervening vegetation and development would block views to the project.

Throughout the project limits, approximately 6.5 acres of vegetation currently exist. Of this existing vegetation, approximately 4.0 acres would be removed as a result of the project, leaving approximately 2.5 acres of existing vegetation in place. Approximately 2.0 acres of new landscaping would be replanted. New project landscaping would include a combination of trees, shrubs groundcovers and vines. After project completion, approximately 4.5 acres would be vegetated, compared to the approximately 6.5 acres of vegetation that currently exists.

Even with the substantial landscaping proposed by the project, the highway corridor would appear somewhat more urbanized than the existing conditions. Although the new landscaping and architectural treatments would substantially reduce the noticeability of the hardscape elements, the walls and structures would inherently remain visible to some extent.

Based on review of local planning policy, it is anticipated that viewers familiar with the area would have a moderately high sensitivity to changes in the visual environment. However as seen by many casual observers traveling Highway 101, the elements proposed by this project would not be unexpected within the highway corridor.

As a result of the moderately high degree of visual change combined with the moderate to moderately high anticipated viewer-sensitivity level, the project would result in a moderate to moderately high level of visual impact. Although the short-term changes caused by the project would be quite noticeable, with time (approximately five to ten years) new plantings along the highway would mature and provide many of the vegetative character and screening benefits of the existing conditions.

With the implementation of mitigation measures recommended in the Visual Mitigation Section, residual visual impacts would be reduced to a moderate level. With the recommended mitigation, the project would more successfully regain the vegetated character of the existing corridor, and the walls and structures where visible would be more visually consistent with community aesthetic goals.

1. Project Description and Alternatives

1.1 PURPOSE OF REPORT

The purpose of this report is to describe the anticipated changes to the visual environment within both the City and the County of Santa Cruz associated with the proposed Highway 1 Soquel to Morrissey Auxiliary Lane Project. This study also proposes measures to mitigate adverse impacts associated with the project on the adjacent communities. Methodologies for the evaluations described in this report follow those outlined by the Federal Highway Administration's (FHWA) Visual Impact Assessment for Highway Projects (1981).

1.2 DESCRIPTION OF PROJECT AND ALTERNATIVES

1.2.1 Project Description

The proposed project extends for a distance of 0.98 mile, from the southbound Soquel Avenue off-ramp to the northbound Morrissey Boulevard on-ramp (post mile 14.96 to post mile 15.94) in the City of Santa Cruz, Santa Cruz County, California. Figure 1 is a map of the project vicinity and location.

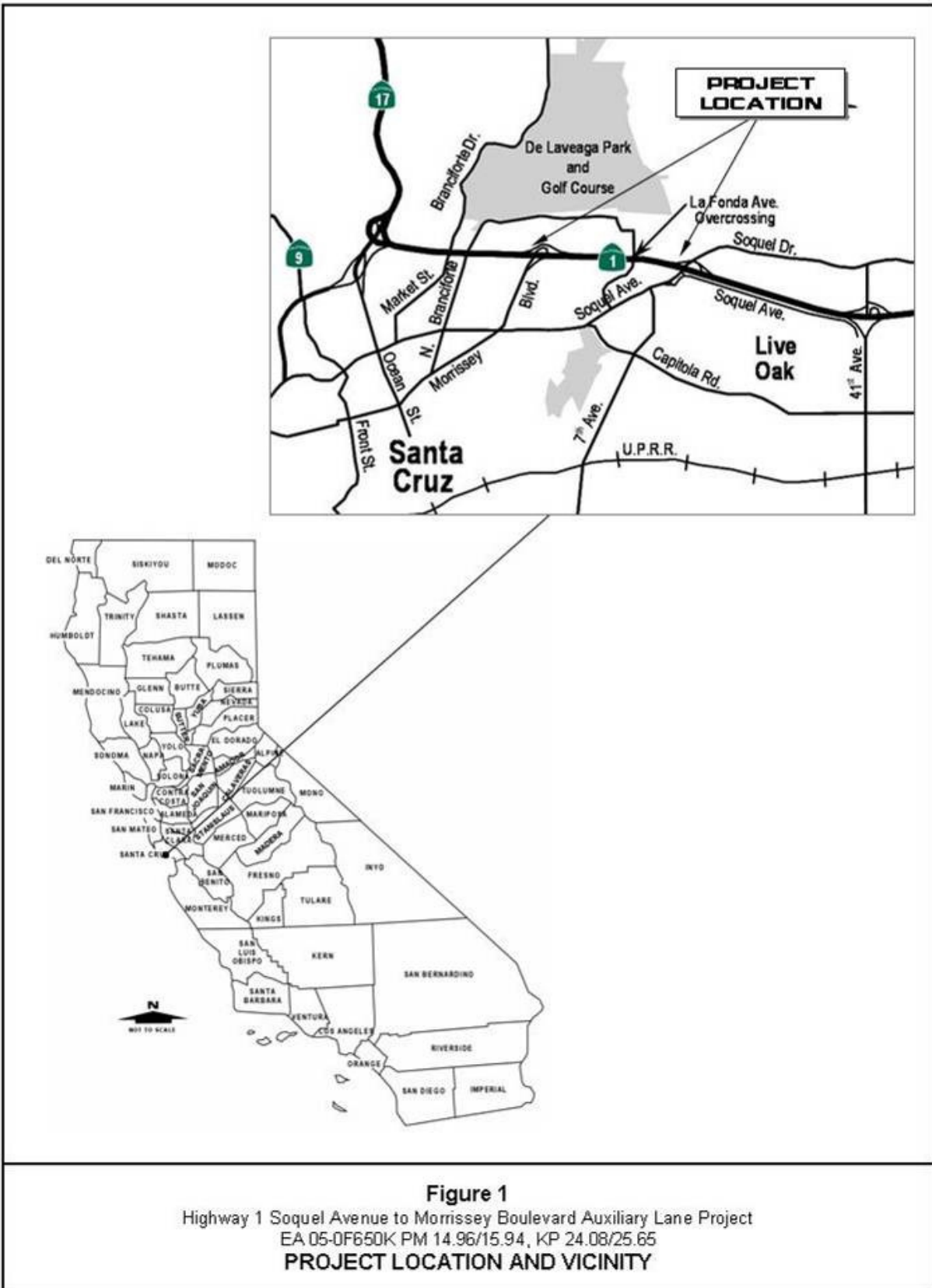
1.2.2 Project Purpose

The purpose of the Soquel to Morrissey Auxiliary Lanes Project is to improve traffic conditions for lane-changing and merging movements on Highway 1 between Soquel Avenue and Morrissey Boulevard and improve pedestrian and bicycle access and safety.

1.2.3 Project Need

Identified needs include recurrent congestion from impeded lane-changing and merging movements, queuing traffic from the southbound bottleneck at the La Fonda Avenue overcrossing, and limited pedestrian and bicycle access crossing Highway 1 in the project area. Each of these is discussed in greater detail below:

Recurrent Congestion and Impeded Lane-changing and Merging Movements: Recurrent congestion and impeded lane changing and merging characterize Highway 1 within the project limits. Mainline traffic volumes on the freeway are approaching or at capacity. Additional traffic accessing the freeway through on-ramps has limited distance



in which to merge and causes mainline traffic flow to break down, leading to bottlenecks. This further impedes the lane changes and merges of traffic entering and exiting the mainline. Bottlenecks occur northbound in the morning and evening and southbound in the evening. The effects of congestion are more pronounced in the peak travel directions—northbound in the morning and southbound in the evening.

Within the Soquel to Morrissey Auxiliary Lane Project limits, existing travel speeds average 46 miles per hour over the peak period. The morning peak period is defined as 6:00 a.m. to noon. The evening peak period is defined as 2:00 p.m. to 8:00 p.m. Within the project limits, total peak-period delay under existing (2003) conditions was 351 vehicle hours per day.

Within the City of Santa Cruz, employment is increasing more than twice as fast as population or households. Santa Cruz is approaching build-out, sending workers to Watsonville, Freedom or Aptos in search of available and affordable housing. This trend indicates continued demand for intra-regional travel along Highway 1 to employment and commercial opportunities.

With currently planned growth in area employment, population and travel demand, future traffic congestion will worsen. By 2015, lane-changing and weaving conditions would worsen as traffic volumes increase. The degradation in conditions for lane changes and merges within the project limits would increase delay on Highway 1 within the project limits is estimated to increase by 173 percent to a total peak-period delay of about 960 vehicle hours per day. Most of the growth in delay is in the southbound direction. Year 2015 is the design year for traffic operational analysis for the present project.

Constraint at the La Fonda Avenue Overcrossing: Highway 1 is constrained to two lanes in each direction under the La Fonda Avenue overcrossing. There is not room under the bridge for additional highway lanes. During the morning peak period, the need for additional space for lane-changing and merging movements creates a bottleneck at the Soquel Avenue on-ramp. During the evening peak period, traffic is congested southbound, and the need for additional space for lane-changing and merging movements creates a bottleneck with traffic backed up on Highway 1 as far as Highway 17. Current average peak-hour speed over both travel directions is 39 miles per hour, which indicates congested conditions on the freeway.

By 2015 with the current bridge in place, average peak-hour speed for both directions combined is expected to be as slow as 25 miles per hour, and total delay will increase dramatically, as cited above.

Limited Pedestrian and Bicycle Access across Highway 1: Within the project limits, there is limited opportunity for pedestrians and bicyclists to get across Highway 1. The only overcrossing within the project limits is at La Fonda Avenue. The Soquel Avenue and Morrissey Boulevard overcrossings are both just outside of the project limits. The La Fonda Avenue overcrossing currently has four-foot pedestrian walkways on both sides (see Figure 1.2-1) and the Morrissey Boulevard overcrossing has an eight-foot pedestrian walkway on one side. The Soquel Avenue overcrossing does not have pedestrian walkways. None of the three overcrossings provides bike lanes. Lack of bike lanes on the La Fonda overcrossing impedes bike access between Harbor High School and DeLaveaga Elementary School and the residential neighborhoods on both sides of the freeway. Bicyclists on the La Fonda overcrossing either share the road with automobiles or share the walkways with pedestrians. These conditions need improvement for both bicyclists and pedestrians.

1.3 ALTERNATIVES

Two alternatives are under consideration: one Build Alternative and the No-Build Alternative.

1.3.1 Build Alternative

The Build Alternative would add one 12-foot-wide auxiliary lane from the Soquel Avenue on-ramp to the Morrissey Boulevard off-ramp in the northbound direction and extend a 12-foot-wide lane from about 500 feet north of the La Fonda Avenue overcrossing to the Soquel Avenue off-ramp in the southbound direction, with 10-foot outside shoulders between the Soquel Avenue and Morrissey Boulevard interchanges. An auxiliary lane extends from the on-ramp of one interchange to the off-ramp at the next interchange and is designed to separate traffic movements entering and exiting the freeway from mainline traffic. It is not designed for use by through traffic.

The overall Project can be divided into several project elements; these are described below:

- **Northbound Lanes:** The Build Alternative would add one 12-foot-wide auxiliary lane from the Soquel Avenue on-ramp to the Morrissey Boulevard off-ramp (0.7 mile) in the northbound direction. A schematic of the build alternative lane layout can be seen in Figure 2A. Figure 2B shows cross-sections at specific locations in the corridor.

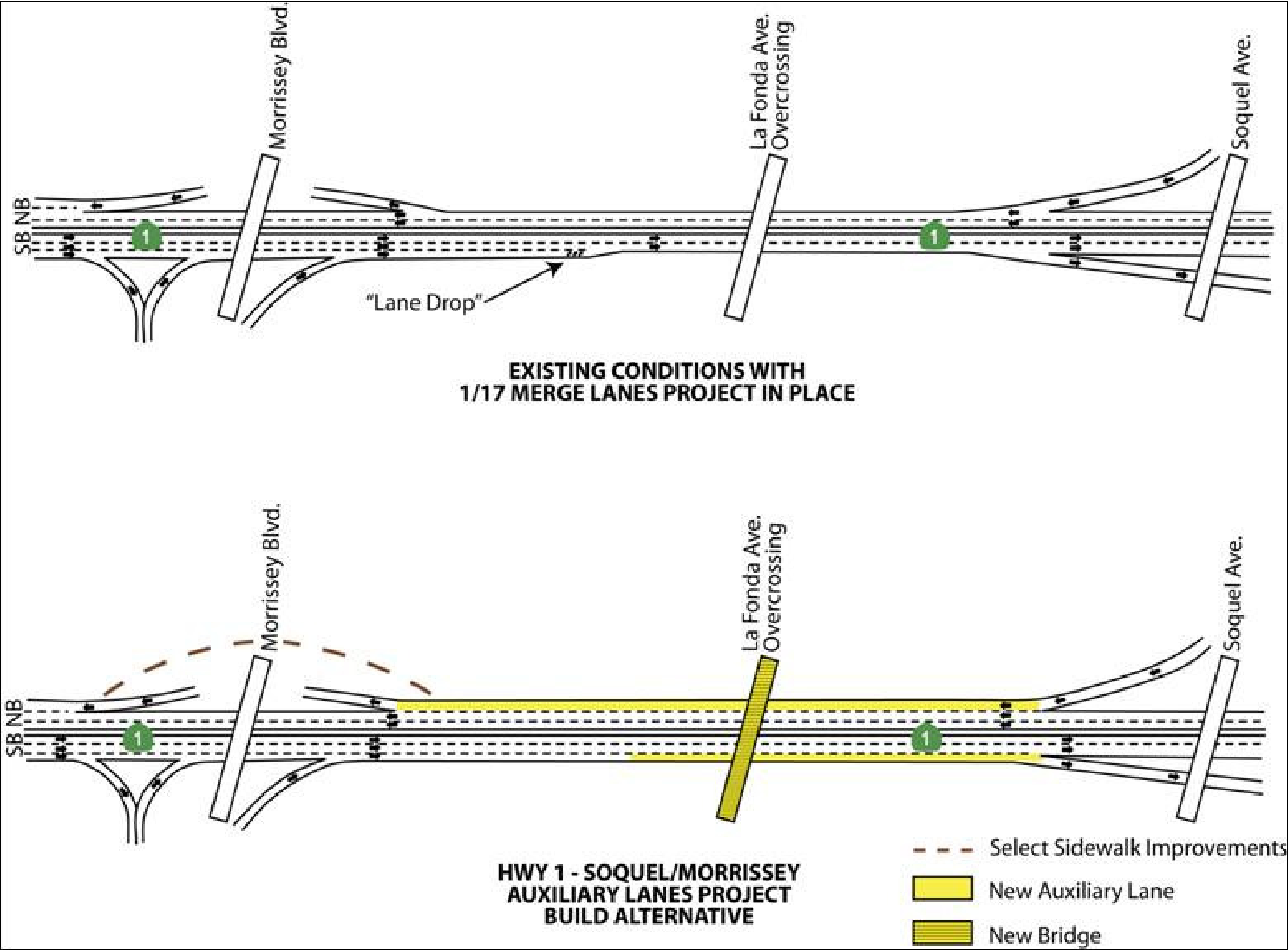


Figure 2A: Build Alternative (Auxiliary Lanes Project), Schematic Drawing

ROADWAY CROSS-SECTIONS

These images illustrate the general relationship between the highway and the adjacent roadside at three typical locations along the project.

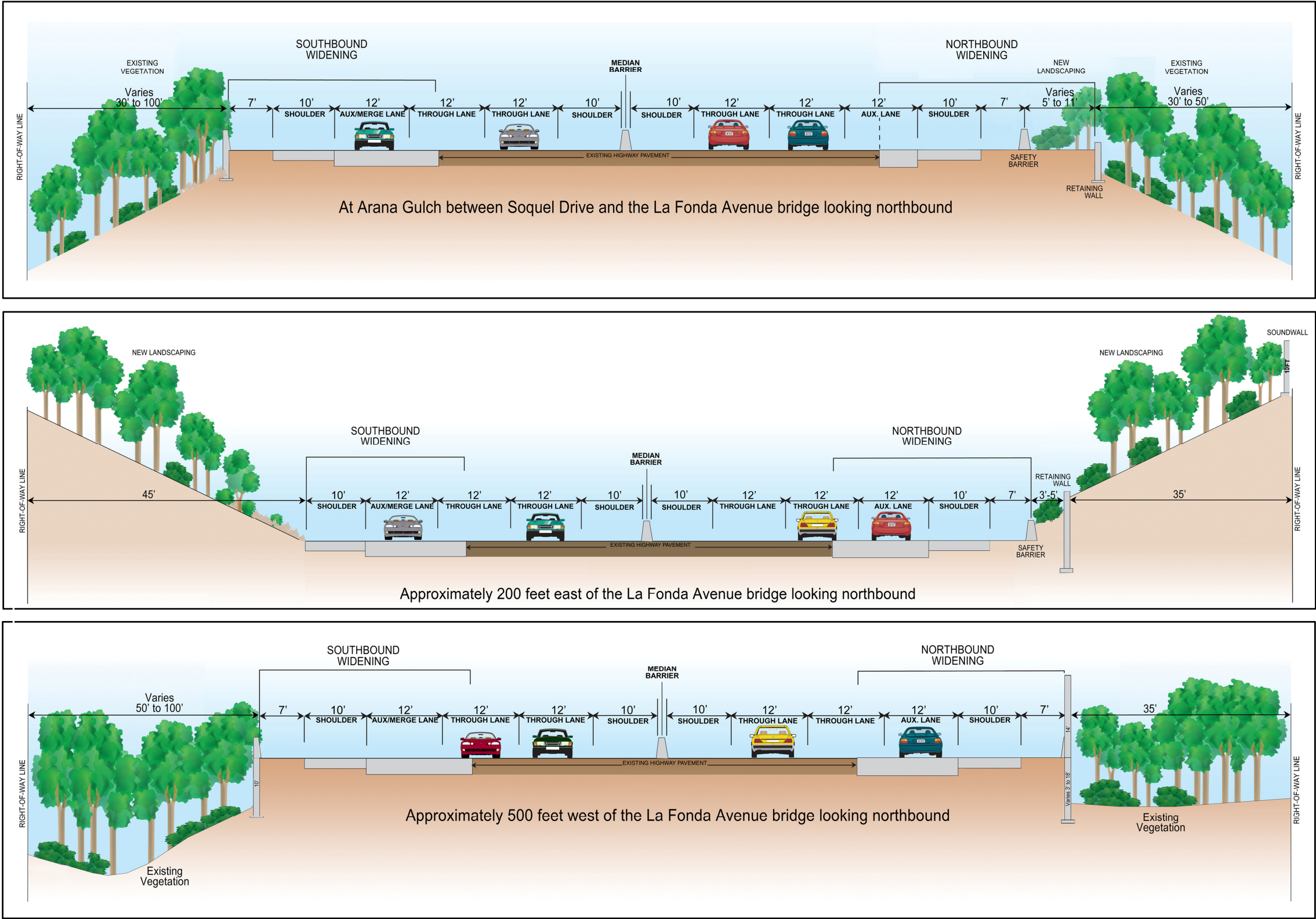


Figure 2B: Cross-Sections at Specific

Not to Scale

- **Southbound Lanes:** The Build Alternative, as shown in Figure 2, would extend a 12 foot-wide lane from about 500 feet north of the La Fonda Avenue overcrossing to the Soquel Avenue off ramp in the southbound direction.
- **Shoulders:** The outside shoulders between the Soquel Avenue and Morrissey Boulevard interchanges would be widened to 10 feet from a variable width of 6.5 to 10 feet northbound and 8 to 10 feet southbound. The inside shoulders (shoulders in the “median” of the highway would be 10 feet on each side of the center barrier.
- **Interchanges:** No changes would be made to the Soquel Avenue or Morrissey Boulevard ramps or any part of the interchanges themselves.
- **Retaining Walls:** Retaining walls are proposed at several locations to retain the roadway or to retain the slopes adjacent to the roadway. Retaining walls would range in height from 3-feet to 18-feet depending on the location and whether the walls were in a cut or fill location. Each wall would be offset from the proposed edge of the pavement between 7-feet to 18-feet, again depending on location. Along portions of retaining walls 3-4 and 5, the area between the concrete barrier and the wall would be filled with soil, creating a slope for replanting. Table 1.1 lists the anticipated project retaining wall heights and locations off of the edge of pavement. Figure 3 shows a map of the wall locations.
- **Sound Walls:** Sound walls found to be both feasible and reasonable are proposed at three locations. In addition an existing sound wall constructed as part of the State Route 1/State Route 17 Merge Lanes Project would be increased in height. On the Auxiliary Lanes Project, sound walls are also proposed primarily along the northbound lanes. These would be located at the top of slopes on either side of the La Fonda Bridge and one set at 7-feet off the proposed edge of pavement. Table 1.2 lists the locations and heights for the project sound walls and Figure 3 shows a map of the wall locations..

Table 1.1
Project Retaining Wall Locations¹

RETAIN. WALL NO.¹	CUT – FILL WALL²	SETBACK FROM EDGE OF PAVEMENT	LIFE SPAN NOTES³	WALL HEIGHT RANGE	APPROX. WALL LENGTH
1	Fill Wall	7 Feet	Removed w/ widening	7 to 15 feet	330 feet
2	Cut Wall	18 feet towards Soquel Dr., 12 feet towards La Fonda end.	Fits into Route Concept configuration	6 to 13 feet	165 feet
3/4 Combo	Cut Wall	12 Feet	Fits into Route Concept configuration	Barrier Height (3 ft.) to 12 feet (under La Fonda Bridge)	510 feet
5	Cut Wall	12 feet at La Fonda Bridge, tapers to 7 feet at Sound wall S-3	Removed w/ widening	12 feet (under La Fonda Bridge) to 5 feet	330 feet
8	Fill Wall	7 Feet	Removed w/ widening	5 to 12 feet	340 feet
Under Sound Wall S-3	100 feet Cut Wall, 280 feet in Fill Wall	7 Feet	Removed w/widening	3 to 6 feet in cut; 3 to 18 feet in fill (not including the sound wall at approx. 14 feet)	380 feet

1. See Figure 3 view for wall location. Note that retaining wall No. 7 was removed from the project by the final analysis of areas of slope vs. walls.
2. Fill Walls support the highway and face outward from the highway corridor. Cut walls are generally seen from within the highway corridor.
3. Walls noted as Removed w/ Widening indicate walls that would likely be removed should the corridor be widened by subsequent projects, such as the HOV Lanes Project, or other projects that build out to the corridor's ultimate route concept configuration.

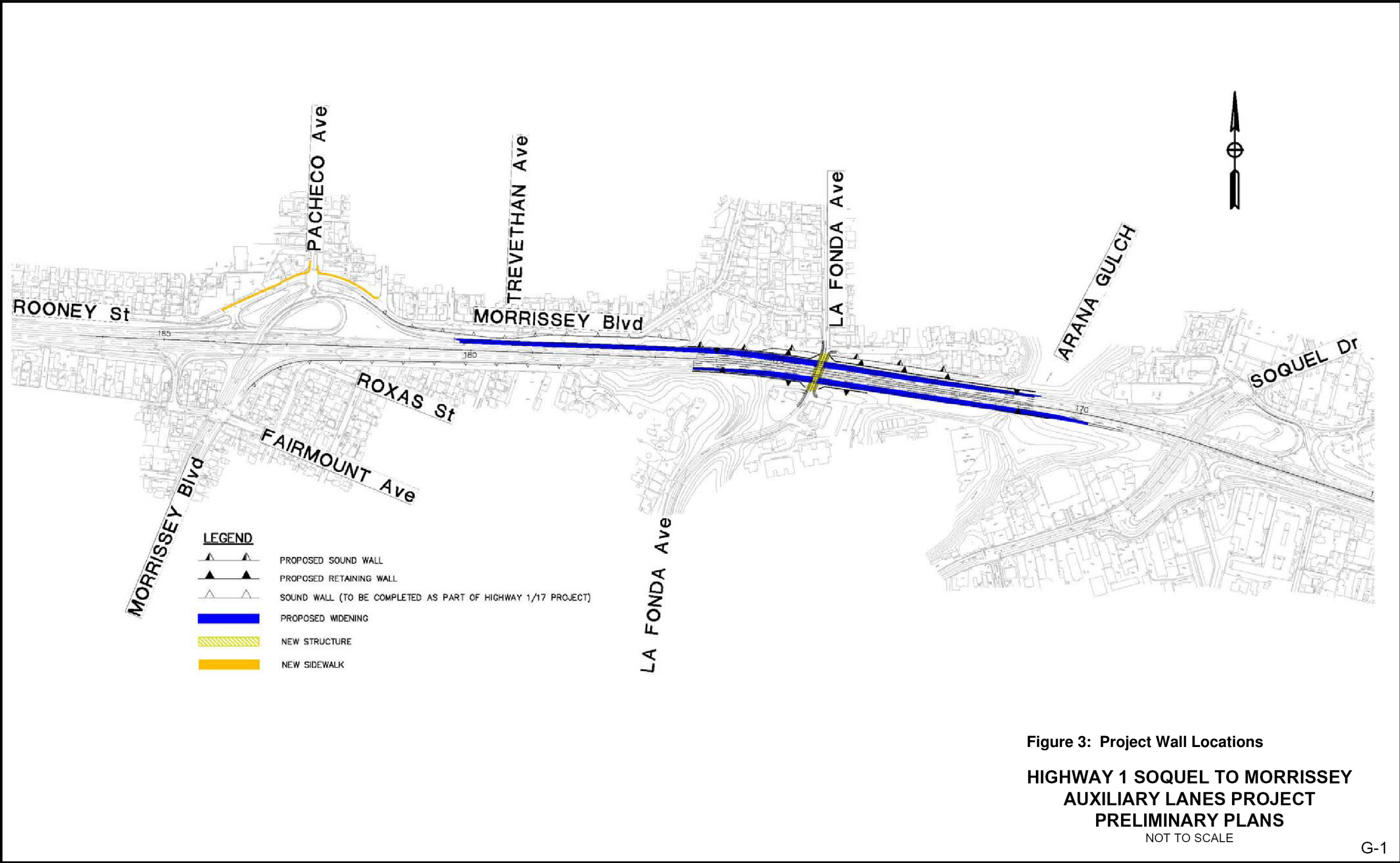


Table 1.2: Project Sound Wall Locations¹

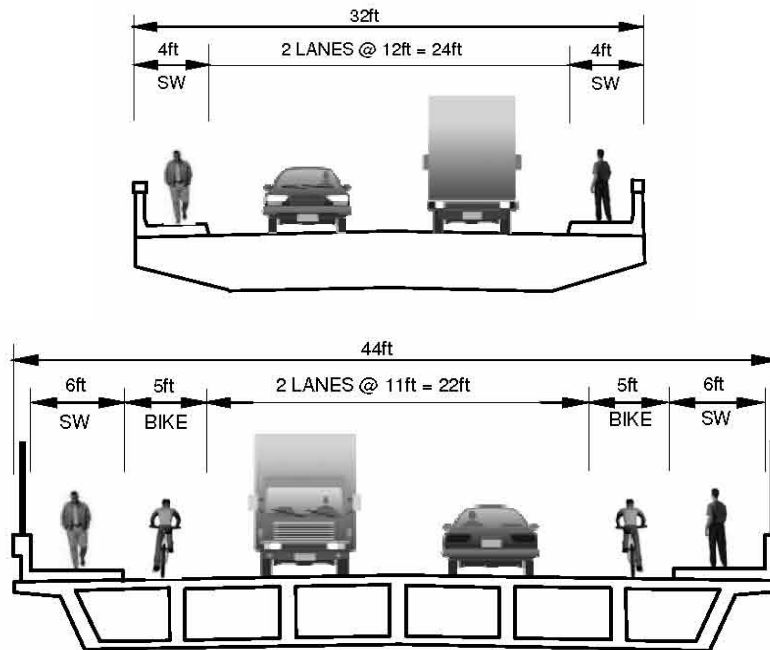
SOUND WALL NO.	SOUND WALL LOCATION & SIDE OF HIGHWAY	APPROX. WALL HEIGHT	APPROX. WALL LENGTH	NO. OF RESIDENCES BENEFITED¹
SW-1	At edge of Right-of-Way Northbound Lanes	8 feet and 10 feet	822 feet	12 Single Family Residences
SW-2	At edge of Right-of-Way & along edge of roadway shoulder Northbound Lanes	10 feet and 4 feet	357 feet	6 Single Family Residences
SW-3	Along edge of roadway shoulder Northbound Lanes	14 feet	390 feet	7 Single Family Residences
1. See Figure 3 for wall location.				

- Local Streets:** Local street improvements between Elk Street and San Juan Avenue are included at the request of Santa Cruz City Public Works Department to improve pedestrian access and safety parallel to Highway 1 at the Morrissey Boulevard Interchange. New five-foot sidewalks plus curb and gutter would be constructed in the gaps between existing segments on the north side of Rooney Street and Morrissey Boulevard. The work would install four accessible driveway approaches and four pedestrian ramps in compliance with the Americans with Disabilities Act.

In addition, a raised crosswalk would be provided on La Fonda Avenue on the south side of the overcrossing in front of Harbor High.

- La Fonda Overcrossing:** The La Fonda Avenue overcrossing would be replaced and widened to accommodate additional freeway width. The new bridge would provide for two 11-foot-wide traffic lanes as well as five-foot-wide bicycle lanes and six-foot-wide pedestrian sidewalks in both directions. See Figure 3 for a depiction of the before and after cross-sections on the La Fonda Bridge.

Figure 4
Existing Bridge (top image) and
Proposed Bridge (bottom image)
Typical Cross-sections



The new La Fonda Avenue Bridge would be wide enough to accommodate an additional highway lane in each direction, without incurring the construction cost of a new bridge, in the event Highway 1 is widened during the 50-year design life of the bridge.

- **Vegetation Removal:** Removal of existing vegetation can be seen at the top of Figure 5. In general, the area of vegetation removal centers on the La Fonda Bridge area. The existing vegetated slopes along the northbound and southbound lanes, both north and south of the existing bridge would be cleared and regarded. This would remove nearly all of the existing vegetation within the Caltrans right-of-way.

Areas outside of the right-of-way, such as the Arana Gulch, would remain. Retaining walls have been proposed in these locations in particular to limit the amount of fill required into these areas. To construct these fill walls, it is anticipated that a contractor would need approximately 5 feet of clear area in front of the wall.

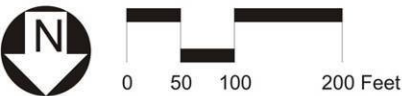


Figure 5: Vegetation Removals and Areas of Potential Re-Landscaping

Route 1 Auxiliary Lane Project

- **New Landscaping:** All areas within the corridor cleared by construction activities and not paved, would be revegetated with either landscape plantings or erosion control measures (such as native grass seeding bioswales, rock lined swales, etc). The bottom image in Figure 5 shows the anticipated areas of revegetation, including planting areas open for all plant types (trees, shrubs, groundcovers, etc.), those open to only shrubs and groundcovers (but no trees), and areas open to vine plantings. Tree limitations are due to Caltrans setback requirements for roadway safety (clear zone requirements) and maintenance. Potential vine plantings are generally associated with wall area and may be planted on either side of the wall, depending on available access, along with vine portals to allow vines to cover both sides of the wall.

1.3.2 No Build Alternative

The No-Build Alternative would not address the project purpose and need, but offers a basis for comparison with the Build Alternative. It assumes no major construction on Highway 1 through the project limits other than planned and programmed improvements and continued routine maintenance.

The only planned and programmed improvement contained in the 2005 Regional Transportation Plan is the State Route 1/State Route 17 Merge Lanes Project, which recently completed construction and is in the landscape phase, anticipated to be completed in 2009, with plant establishment activities to continue through 2012. The State Route 1/State Route 17 Merge Lanes Project is considered as part of existing conditions for the Soquel to Morrissey Auxiliary Lanes Project.

The Highway 1 High Occupancy Vehicle (HOV) Lane Widening Project is also planned, but is not included in the No-Build Alternative, as it is not yet programmed and would not be completed by the 2015 opening year for the Soquel to Morrissey Auxiliary Lanes Project.

1.4 REGULATORY SETTING

Interpretation of existing visual character and land uses was based on numerous field visits that occurred between 2006 and 2009. Aerial photography and direct observation provided base information of existing buildings and roadways.

The National Environmental Policy Act (NEPA) of 1969, and Council on Environmental Quality (CEQ) regulations to implement NEPA, both discuss visual impacts under the heading of aesthetics. These regulations identify aesthetics as one of the elements or factors in the human environment that must be considered in determining the effects of a project. Further, Title 23, USC 109(h) cites “aesthetic values” as a matter that must be fully considered in developing a project. In addition to the Federal guidelines and requirements, the State of California, through the California Environmental Quality Act (CEQA), establishes that it is the policy of the State to take actions to provide the people of the state “with...enjoyment of aesthetic, natural, scenic, and historic environmental qualities¹. To address CEQA requirements, Caltrans has developed the Standard Environmental Reference (SER) which provides information on the approach the Department uses to identify visual and aesthetic issues that may result from transportation projects.

1.4.1 Visual Assessment Methodology

This visual assessment was prepared consistent with the methodologies established by the Federal Highway Administration’s (FHWA) *Visual Impact Assessment for Highway Projects* (1981). This methodology divides the views into landscape or character units that have distinct, but not necessarily homogenous, visual character. Typical views, called key viewpoints, are selected for each unit to represent the views to/from the project. The view of the motorist is also considered as a separate character unit.

Existing and proposed visual quality from the viewpoints is judged by three criteria: vividness, intactness, and unity. Descriptions for the three criteria are:

- Vividness: The memorability of the landscape components as they combine to form striking or distinctive patterns.
- Intactness: The integrity of visual order in the view and its freedom from non-typical visual encroachment.
- Unity: the visual coherence and composition of the landscape viewed to form a harmonious visual pattern.

These criteria provide a method for describing the form, line, color, and texture of the components found within a view. As in all things aesthetic, “beauty is in the eye of the beholder” and, therefore, there is a subjective component to this or any visual analysis evaluation. However, as outlined in the FHWA methods, the use of these federally-

¹ California Public Resources Code Section 21001(b). 2003. http://ceres.ca.gov/topic/env_law/ceqa/stat2/index.html

established descriptors provides a basis for understanding the evaluator's rationale behind a visual quality determination, as well as a reliable predictor of viewers' anticipated response to changes.

To address the requirements identified in the FHWA methodology, the following seven steps were performed to assess the visual impacts of the proposed project:

- Define the project setting and viewshed;
- Identify the regulatory setting of the project area;
- Identify key views for visual assessment;
- Analyze existing visual resources and viewer response;
- Depict the visual appearance of project alternatives;
- Assess the visual impacts of the project alternatives;
- Propose methods to mitigate adverse visual impacts.

It is important to note that visual character terms are descriptive and non-evaluative, meaning that they are based on defined attributes that are neither good nor bad by themselves. Changes in visual character cannot be described as having good or bad attributes until compared with viewer responses to the change.

1.4.2 Additional Regulations

Scenic Routes: The entire Highway 1 corridor in Santa Cruz County is defined as 'Eligible' for scenic designation in the State Scenic Highway Program. For a route to become an Officially Designated State Scenic Highway, the local jurisdiction(s) adjacent to the highway apply for nomination and develop a Corridor Protection Plan for approval by the State of California.

The Scenic Highway Program does not preclude development for corridors that are determined 'Eligible' or 'Designated'. On Official Designated Highways, Caltrans works with appropriate agencies to ensure the protection of scenic corridors to the maximum extent feasible. It identifies impacts to scenic corridors such as degradation and obstruction of scenic views as an integral part of its planning, project development and maintenance programs. Routes determined 'Eligible' but not 'Officially Designated' would likely remain consistent with goals of the State Scenic Highway Program if proposed highway projects adhere to the planning and design efforts mentioned above.

Local Policy and Goals: The proposed development is located primarily in the City of Santa Cruz, with a small portion of the eastern end in Santa Cruz County under the City's sphere of influence. Although this state-owned route is not under the jurisdiction of the local planning authorities, the following planning policies and guidelines are indicators of the general level of community sensitivity regarding the aesthetic character of the region and of the project area.

- **Community Design Background Report** (November 2006): This report was used to develop and support the changes to the City's General Plan 2025. The report discusses the City's context and identity, neighborhoods, development styles and patterns, community features (such as parks, open space, gateways, nodes, etc.), and regulations and/or guidelines for future development.
- **City of Santa Cruz General Plan 2030** (Administrative Draft, February 2009): The draft version represents a comprehensive revision of the City's 1990-2005 General Plan. It, among other things, expresses the desires of the community regarding its physical, social, economic, cultural, and environmental character. It establishes what the community wants to reinforce or change and provides guidelines for change while preserving environmental resources, generating economic stability, and maintaining public services and facilities at adequate levels. The Vision expressed in the plan states that *"Surrounded by greenbelt and the Pacific Ocean, Santa Cruz is a compact, vibrant city that preserves the diversity and quality of its natural and built environments, creates a satisfying quality of life for its diverse population and workers, and attracts visitors from around the world"* (page 12).

Chapter 3 of the General Plan addresses Community Design and Chapter 5 discusses Mobility. Relevant goals, policies and actions identified in these chapters include:

- Goal CD1: *A built environment in harmony with its natural setting.* Accomplish this by preserving natural features that visually define areas in the city and ensures that development is designed to be in harmony with natural topography and vegetation.
- Goal CD3: *High-quality design that reinforces the community's unique character.* Accomplish by among others things, developing and maintaining physical and visual linkages between key areas in the city.

Goal CD4: *Attractive gateways, roadways, and landscaping.* Accomplish by making the city's major gateways defining, attractive, and welcoming, by among other elements, developing a citywide Gateway Plan that identifies and defines neighborhoods and relates to Area Plan requirements; identify and establish design concepts that make visitor-serving corridors attractive and interesting through landscaping, banners, flags, art, and displays.

In addition, Goal CD4 also seeks to ensure that new development and right-of-way improvements enhance the visual quality of streetscape, including undergrounding utilities when major road improvements or reconstruction is proposed; and by developing guidelines that ensure sound walls, retaining walls, or fences are visually interesting and well landscaped. Lastly, Goal CD4 makes provisions to ensure attractive, functional, and appropriate landscaping throughout the city by protecting existing significant vegetation and landscaping that provides scenic value along with wildlife habitat and forage, developing a street tree master plan, and implementing streetscape and other landscaping plans in the City's Area and Specific Plans.

Goal M2: *A safe, sustainable, efficient, adaptive, and accessible transportation system.* Methods to achieve this goal include: providing leadership on sustainable regional mobility; encouraging diverse local and regional transit options; and supporting regional funding and implementation of key regional projects that can significantly benefit Santa Cruz and further the City's mobility policies.

Goal M3: *A safe, efficient, and adaptive road system.* Methods for achieving this goal include: acknowledging and managing congestion; seeking ways to reduce vehicle trip demand and reduce the number of peak hour vehicle trips; encouraging high occupant vehicle travel; striving to maintain the established "level of service" D or better at signalized intersections; and accepting a lower level of service and higher congestion at major regional intersections if necessary improvements would be too costly or result in significant environmental impacts.

- **City of Santa Cruz Heritage Tree Ordinance:** The City of Santa Cruz has established a preservation of heritage trees and shrubs within the city. A heritage tree or shrub is defined in the ordinance as *“Any tree, grove of trees, shrubs or group of shrubs, growing on public or private property within the city limits of Santa Cruz which ... have a trunk circumference of 44 inches (approximately 14 inch diameter tree) measured at 54-inches above existing grade ... or any tree, grove of trees, shrub, or grouping of shrubs which have historical significance...”*
- **Santa Cruz County General Plan:** In addition to the City’s General Plan, the County of Santa Cruz has a General Plan for area under its jurisdiction. In addition the County seeks to work with other agencies, such as the City of Santa Cruz to prescribe appropriate development patterns and styles that are compatible with the community. In addition the County’s General Plan sets goals and policies for quality design and the use of native landscaping. Planned improvements to State Route 1 include widening the highway for HOV Lanes.

Caltrans Policies and Goals

- **Context Sensitive Solutions:** Context Sensitive Solutions, or CSS, is a policy established by Caltrans as an “approach to plan, design, construct, maintain, and operate its transportation system.” CSS is an approach to transportation projects that places preservation of historic, aesthetic, scenic, natural environment and other community values on an equal basis with transportation safety, mobility, economics, and maintenance. The intended result of employing CSS design on projects is to create transportation projects that are in harmony with a community’s values and objectives by allowing community input into the design process.
- **Landscape Regulations:** Caltrans policy requires replacement of landscaping removed as a result of construction to the greatest extent practical. In addition to community aesthetics, a primary goal of new planting is the safety of maintenance workers and travelers on the roadway. Because of newer safety requirements it cannot be assumed that new plantings would be in-kind and in-place of the existing plantings.

Landscape opportunities are also affected by new water quality requirements. Some of the methods typically employed to improve the quality of the water running off of adjacent project pavement include detention ponds that allow pollutants to settle out, and bioswales, i.e. grassed ditches, that use plantings

along the swale to filter out the impurities. In both of these treatments, woody landscape plantings, including shrubs and groundcovers, are not allowed. Detention ponds must be cleaned out to remove sediment, and bioswales require grasses to act as a filter. Therefore the placement of these elements within a corridor can greatly affect landscape plantings opportunities at any one particular location.

Coastal Zone: There are no portions of the project corridor that fall within the Coastal Zone as defined by Santa Cruz County and the State of California.

2. Affected Environment

2.1 PROJECT SETTING

A regional landscape defines those elements of the natural and built environment that together form a unique visual identity of a place. This section describes the visual environment and general landscape characteristics which surround the project area. For additional discussion of the project setting, refer to Chapter 3, Existing Visual Character.

The regional landscape for Highway 1 (Route 1) between Soquel Avenue and Morrissey Boulevard is characterized by a rolling landscape that has been partially urbanized and partially remaining in open space. The project area for this visual assessment can be seen in Figure 7 and typical views in Figures 8 and 9 in Section 3 of the report. In general, the landforms slope down to the south, and the highway is located on a bench with a cut slope on the north side. The development along the corridor is suburban in nature with homes on small lots, and small, commercial style development. These are generally low one- to two-story structures. Open space is predominantly associated with the Arana Gulch which crosses the corridor in the area between La Fonda Avenue and Soquel Avenue. The Arana Gulch is a vivid counterpoint to the built environment that comprises the remainder of the project corridor which includes the highway, highway overcrossing structures and adjacent development.

The vegetation associated with the Arana Gulch is dominated by mature stands of eucalyptus. These trees create a large visual element in the landscape due to their size and density. The highway roadsides are generally well-vegetated with native and ornamental trees and shrubs. The roadside vegetation, combined with the adjacent landform contributes to a somewhat enclosed spatial characteristic through portions of the corridor, particularly east of the La Fonda overcrossing. Gaps in the existing vegetation provide glimpses of the adjacent community as well as the distant hills.

Fog that routinely rolls in from the Pacific Ocean is another visual characteristic within the corridor. When it is present, the fog is a powerful presence in the landscape, limiting extent and duration of views, as well as changing the quality of light and the way other visual elements are perceived.



Aerial View of Existing Project
Corridor showing location of
Landscape Units

Figure 6

2.2 LANDSCAPE UNITS

To aid the visual analysis of the project, the project corridor is divided into landscape units. The Federal Highway Administration methodology defines a landscape unit as “an area of distinct, but not homogeneous, visual character which is spatially enclosed at ground level; a visually identifiable place or ‘outdoor room’ useful for visual assessment and management, particularly for visual quality.”

For the purpose of this study the Highway 1 project corridor from Morrissey Boulevard to Soquel Avenue is divided into two landscape units (refer to Figure 7). These areas are visually distinct, but not necessarily homogenous, in character. The two landscape units from the eastern project limit to the western project limit are:

Santa Cruz Landscape Unit: This landscape unit, extending from Morrissey Boulevard to the La Fonda Avenue overcrossing, is predominantly urbanized and residential. Most of the residential development consists of smaller homes on small lots on both sides of the highway. There is also some retail/commercial development fronting Morrissey Boulevard south of the highway.

Portions of this landscape unit were affected by the construction of the State Route 1/State Route 17 Merge Lanes project. Areas around the Morrissey Interchange and to the east towards the La Fonda Bridge were cleared of vegetation and sound walls were constructed. In addition, an additional southbound lane was constructed for a portion of this distance. Areas that were cleared of existing vegetation have been replanted as part of the Merge Lane Project.

Arana Gulch Landscape Unit: In this landscape unit the project areas within the right-of-way and adjacent to the corridor are primarily dominated by vegetation, especially the areas associated with Arana Gulch. This unit also contains Harbor High School, which abuts Highway 1 on the south side at the La Fonda Avenue Overcrossing.

2.3 PROJECT VIEWSHED

A viewshed is the area normally visible from an observer’s viewpoint or location, including the screen effects of any vegetation or structures. Limits of a project viewshed are defined as the visual limits of the views located from the proposed project. The project viewshed is described in Section 3, and includes the locations of viewers likely to be affected by visual changes brought about by the project features. Key viewpoints are described and illustrated in Section 4.4.

3. Existing Visual Character

Description of the existing visual character for the corridor is divided by the landscape units found within the project corridor. The description of each landscape unit includes a figure that illustrates, through photographs, typical views within that landscape unit. Of these typical views, certain viewpoints were selected to be key views within each unit. These are identified with a star for reference on the Typical View Figures. These views were chosen as key views because, of all of the typical views, they best demonstrated the changes associated within that unit. Changes to the visual quality/character for each key view are discussed in Section 4, Environmental Consequences.

3.1 EXISTING VISUAL CHARACTER

Santa Cruz Landscape Unit: From the highway motorist perspective, this landscape unit is predominantly urban in character due to the presence of adjacent residential and commercial development. Residential development is the characteristic development type in this landscape unit. These homes are on small lots with views of the highway from either across a highway frontage road, or from within a backyard backing onto the highway right-of-way. In some areas in the Santa Cruz Landscape Unit, older highway plantings and volunteer plants create a dense screen between the highway and adjacent land uses. Much of this vegetation located near Morrissey Boulevard to the west and tapering into the project corridor has been removed by the State Route 1/State Route 17 merge lanes project which is currently under construction. Typical views for the Santa Cruz unit can be seen in Figure 7.

Arana Gulch Landscape Unit: From the highway motorists' perspective, this landscape unit is primarily vegetated. There are residences to the north of the highway, and Harbor High School is located in the southeast quadrant of the La Fonda Avenue overcrossing and Highway 1. School parking and access roads are located adjacent to the highway right-of-way, but views to and from the school facilities to the highway are screened by vegetation. The residences generally sit higher than the highway while the school sits lower in the landscape than the highway. The highway plantings are made up of both older highway plantings and volunteer plants. The Arana Gulch landscape is characterized by heavily wooded vegetation and mature stands of eucalyptus trees which visually dominate the roadway views. The height of these trees is well over 50 feet, placing their canopies high within the views. Typical images for the Arana Gulch unit can be seen in Figure 8.

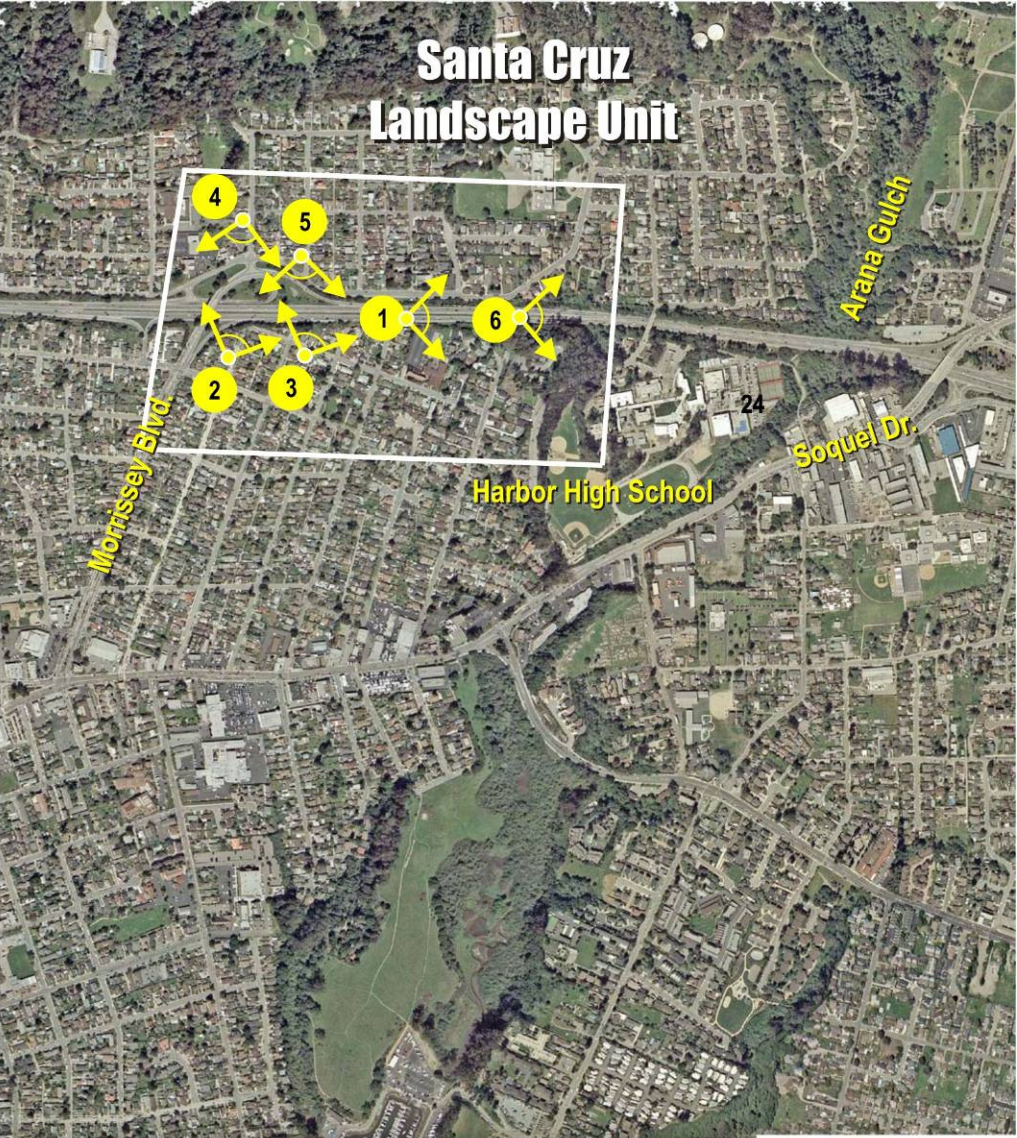


Figure 7
Santa Cruz Landscape Unit
Typical Existing Views



3.2 EXISTING VISUAL QUALITY

Santa Cruz Landscape Unit: Existing overall visual quality for this unit is moderate, with moderate vividness, intactness and unity. Residential development is low in density and height, contributing to a moderate degree of overall intactness and unity. The intactness and unity ratings are due in part to the fact that residences, although visible, then to blend into the landscape because they are generally viewed at a distance from the highway. The vegetation associated with the screening plantings along the highway, primarily in areas furthest to the east within the landscape unit, creates a high degree of unity and intactness to the highway corridor. Areas to the west, however, where vegetation has been removed by the State Route 1/State Route 17 Merge Lanes Project, have an overall moderately low visual quality without mitigation in place. It is expected that mitigations measures associated with the State Route 1/State Route 17 Merge Lanes Project, such as new plantings in the western areas of the landscape unit, would over time heighten the existing visual quality to maintain an overall moderate visual quality for the Santa Cruz Landscape Unit.

Arana Gulch Landscape Unit: Existing overall visual quality for this unit is moderately high, with high vividness, moderate intactness, and moderate unity. The primary reason for the rating is the vividness of the skyline trees in the landscape unit. These trees and associated plants soften the landscape and screen views to and from the highway. The vegetation associated with Arana Gulch and the screening plantings along the highway create a relatively high unity and intactness to the highway corridor.

3.3 PREDICTING VIEWER RESPONSE

Viewer response is based on two elements – viewer sensitivity and viewer exposure. These elements combine to form a method of predicting how the public might react to visual changes that result from the highway improvements.

Viewer sensitivity can be defined as the concern for scenic quality and the response to change in the visual environment that creates the view. Local values and goals may place greater significance on certain landscape components or locations that might appear unremarkable to an outside observer. Viewer exposure is typically assessed by considering the number of viewers exposed to the view, the type of viewer activity associated with the view, the duration of their view, the speed at which the viewer moves through the environment, and the position of the viewer.

3.4 EXISTING VIEWER SENSITIVITY

The City of Santa Cruz has established design guidelines for several portions of the city, although none fall immediately adjacent to the corridor. Regulations aimed at preserving the visual quality of the community have been established. Common themes that emerge from the regulations and guidelines are the importance of preserving the existing vegetation and historic character. Riparian corridors also are protected through ordinances that recognize the importance of these corridors to the visual and aesthetic quality of the community. The sum of these and other efforts to preserve and protect important aesthetic elements within the community indicates that the community has high sensitivity to changes in visual quality. Refer to Chapter 1.4 *Regulatory Setting* for further discussion of City of Santa Cruz visual policy and goals.

3.5 EXISTING VIEWER GROUPS, EXPOSURE, AND AWARENESS

Freeway Travelers: There are approximately 74,500 vehicles per day (northbound and southbound) in the eastern portion of the project and 111,400 vehicles per day in the western portions near Morrissey Boulevard. Many drivers commute daily from the Santa Cruz-Capitola-Aptos area to jobs in the San Jose area every day. During periods of free-flow travel with vehicles travelling at the posted speed limit, views through the project area are available for approximately 55 seconds. With congested traffic, the length of exposure increases and drivers have a longer time to focus their attention on the highway elements.

Daily commuters may have an increased awareness of views from the road due to the amount of time they are exposed to the corridor each day. When traveling at posted speeds, these drivers tend to focus on long to mid-range views straight ahead. Passengers tend to have more potential viewing time and a wider range of views than the driver of the vehicle.

Views from Residences: A number of residents live adjacent to the highway, particularly in Santa Cruz landscape unit. Many homes either directly face or back onto the highway, giving the residents fore to mid-ground views of the corridor. In other locations, the homes are set farther back and may have commercial properties between the homes and the highway. These homes have mid- to background views of the highway, although most views of the highway are at least partially obscured by existing highway plantings.

Residents can be expected to have a high concern about the project and its effect on views from their homes and neighborhoods. In addition, residents have a concern about the views from the highway into their communities, as would be expected of communities where

tourism plays an important role in the local economy. These views from the highway would be expected to be of short duration.

Local Street Users: Local street users, including drivers, bicyclists, and pedestrians have short duration views into the Highway 1 corridor. These include views from bridge overcrossings over the highway as well as from adjacent local streets. Because the speed of travel of these viewer groups is much slower than that of the highway traveler, it can be expected that they would have a greater awareness of changes to the visual environment than the highway user. Views to the corridor would move from back and mid-ground views to foreground views as they near the highway corridor.

Views from Harbor High School: Harbor High School is located in the southeast quadrant of State Route 1 and the La Fonda Overcrossing. The school falls between La Fonda and the Arana Gulch. The areas of the school that are adjacent to the highway right-of-way include parking, access roadways, and service areas. Within the Caltrans right-of-way, landscape areas are well vegetated with pine, acacia, and eucalyptus. Because the majority of views into the highway corridor are from the parking and service areas, it is anticipated that views would be brief, but that this user group is likely to be very sensitive to changes in the visual environment due to their familiarity with the existing views.

4. Environmental Consequences

4.1 ASSESSING PROJECT IMPACTS

The visual impact of project alternatives is determined by assessing the visual resource change due to the project and predicting viewer response to that change. Visual resource change is the total change in visual character and visual quality. The first step in determining visual resource change is to assess the compatibility of the proposed project with the existing visual character of the landscape. The second step is to compare the visual quality of the existing resources with the projected visual quality after the project is constructed. Viewer response to the changes is the sum of viewer exposure and viewer sensitivity to the project as described in Section 3. The resulting level of visual impact is determined by combining the severity of resource change with the degree to which people are likely to respond to the change.

The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) require consideration of visual resource impacts of projects in preparation of environmental documents. NEPA guidelines² for the assessment of visual impacts stipulate that environmental documents:

- State whether the project alternatives have a potential for visual quality impacts;
- Identify the impacts to the existing visual resources;
- Identify the relationship of the impacts to potential viewers of and from the project; and
- Identify measures to avoid, minimize, or reduce the adverse impacts.

The CEQA guidelines, Appendix G (as amended July 11, 2006), state that a project may have a significant impact on visual quality if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

² USDOT, 1987. United States Department of Transportation, Federal Highway Administration, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, Technical Advisory T6640.8A, October.

- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Levels of potential visual impact are categorized as low, moderate, moderately high, and high based on the following descriptions³:

- Low: Minor adverse change to the existing visual resource, with low viewer response to any change.
- Moderately Low : Low adverse change in the visual resource with moderate viewer response or moderate adverse change with a low viewer response.
- Moderate: Low to moderate adverse change to the visual resource combined with low to moderate viewer response.
- Moderately High: Moderate adverse change in the visual resource with high viewer response or high adverse change with a moderate viewer response.
- High/Significant: High level of adverse change combined with a high level of sensitivity to the change.

At the end of this section, there is a description of the visual impacts associated with each of the key views and a simulation showing the anticipated visual environment. The proposed visual quality is described at the end of each key view discussion and is also summarized in the table at the end of the section. The proposed visual quality described in the table assumes the implementation of highway planting as required by Caltrans policy (refer to Figure 5 for likely replanting areas), as well as a modest amount of aesthetic treatment to structures such as walls and the La Fonda Bridge., based on review of similar recent Caltrans projects of this type and scale

4.2 NO-BUILD ALTERNATIVE

The No-Build Alternative includes routine maintenance within the Soquel to Morrissey Auxiliary Lanes Project corridor area. There would be no expanded capacity in the roadway or improvements to traffic flow patterns and the corridor would remain essentially unchanged.

³ Caltrans, 2006. Standard Environmental Reference, Environmental Handbook, Volume 1: Guidance for Compliance, Chapter 27: Sample Assessments, I-15 Managed Lanes.

Because the State Route 1/State Route 17 Merge Lanes Project is already under construction, visual changes associated with that project are part of the existing environment for the analysis of the Soquel to Morrissey Auxiliary Lanes Project. The changes to the visual environment of the corridor created by the State Route 1/State Route 17 Merge Lanes Project primarily include additional pavement width, the removal of vegetation and the construction of sound walls. The final environmental document for the State Route 1/State Route 17 Merge Lanes Project includes an analysis of that project's affect on the aesthetic environment. This visual study for the Soquel to Morrissey Auxiliary Lanes Project addresses the Merge Lanes Project in terms of the existing setting and its contribution to the cumulative visual experience (*Route 1/17 Widening for Merge Lanes, Negative Declaration/Finding of No Significant Impact*, January 2002).

4.3 BUILD ALTERNATIVE

The analysis of the Build Alternative first provides an overview analysis of the project for the existing corridor and for each of the landscape units. Following the overview analysis, is a study of Key Viewpoints with photosimulations depicting existing and anticipated post-construction views. The sections concludes with a series of three tables that summarize the anticipated viewer sensitivity per key viewpoint (Table 4.1), the anticipated visual quality change by key viewpoint, (Table 4.2), and the general visual quality changes by landscape unit (Table 4.3). The anticipated changes are shown in terms of the FHWA categories of vividness, intactness, and unity.

4.3.1 Analysis Overview

The project would result in moderate to moderately-high changes to the visual environment, based primarily on the loss of mature vegetation and the introduction of new pavement lanes, retaining and sound walls, and the larger La Fonda Avenue Bridge. Many of these changes would be visible from both the highway and the adjacent community. Away from the immediate vicinity of the highway corridor, intervening vegetation and development would block views to the project.

Throughout the project limits, approximately 6.5 acres of vegetation currently exist. Of this existing vegetation, approximately 4.0 acres would be removed as a result of the project, leaving approximately 2.5 acres of existing vegetation in place. Approximately 2.0 acres of new landscaping would be replanted (refer to Figure 5). New project landscaping would include a combination of trees, shrubs groundcovers and vines. After project completion,

approximately 4.5 acres would be vegetated, compared to the approximately 6.5 acres of vegetation that currently exists.

Even with the substantial landscaping proposed by the project, the highway corridor would appear somewhat more urbanized than the existing conditions. Although the new landscaping and architectural treatments would substantially reduce the noticeability of the hardscape elements, the walls and structures would inherently remain visible to some extent.

Based on review of local planning policy, it is anticipated that viewers familiar with the area would have a moderately high sensitivity to changes in the visual environment. However as seen by many casual observers traveling Highway 101, the elements proposed by this project would not be unexpected within the highway corridor.

As a result of the moderately high degree of visual change combined with the moderate to moderately high anticipated viewer-sensitivity level, the project would result in a moderate to moderately high level of visual impact. Although the short-term changes caused by the project would be quite noticeable, with time (approximately five to ten years) new plantings along the highway would mature and provide many of the vegetative character and screening benefits of the existing conditions.

With the implementation of mitigation measures recommended in the Visual Mitigation Section, the project would more fully regain the vegetated character of the existing corridor, and the residual visibility of walls and structures would be more visually consistent with community aesthetic goals.

Impact Analysis Overview of the Santa Cruz Landscape Unit: Within this landscape unit, the proposed changes include widening of the highway in both the northbound and southbound direction, where the existing pavement would be expanded to accommodate the new auxiliary lane. In addition, there would be a 7-foot wide unpaved area between the new edge of pavement and the retaining walls. Large areas of vegetation along the highway in this landscape unit were disturbed by the construction of the State Route 1/State Route 17 Merge Lane Project. Therefore the extent of impacts to the roadside vegetation associated the auxiliary lanes project is less than it would be if no prior clearing had occurred. Any additional clearing of vegetation under the proposed project would occur in the areas of this landscape unit located closest to the La Fonda Avenue overcrossing.

As part of the recent construction of the State Route 1/State Route 17 Merge Lanes Project, new sound walls were built along the highway corridor. The Soquel to Morrissey Auxiliary Lanes Project will continue the sound walls to the east past the La Fonda Avenue

overcrossing into the Arana Gulch Landscape Unit. As indicated in Table 1.2, sound walls are proposed on top of the roadside barrier in some locations and would therefore be immediately adjacent to the roadway. Where feasible, landscape planting mitigation, through the use of vine portals, can alleviate the visual imposition of these walls for Highway 1 travelers.

Without mitigation, the Santa Cruz Landscape Unit would have an overall moderately low visual quality, with moderate vividness, moderately low intactness, and moderate unity. The vividness would remain moderate, even without mitigation due to the large number of skyline trees associated with the Arana Gulch that would still remain after construction. With mitigation, the landscape unit is likely to maintain its overall moderate rating, with moderate vividness, intactness, and unity. The reasons behind the likelihood of maintaining the visual quality of the unit include the remaining skyline trees within the gulch area and the addition of new plantings along the northbound lanes.

With mitigation, the Santa Cruz Landscape Unit would maintain its existing moderate vividness, intactness, and unity that currently defines the visual quality of this landscape unit. The overall visual character of the unit is expected to remain the same, at moderate, with mitigation in place.

Impact Analysis Overview of the Arana Gulch Landscape Unit: The changes to the existing visual environment within this landscape unit are primarily associated with the new La Fonda Avenue overcrossing and the extension of the existing sound wall along the northbound side of the highway. The existing La Fonda Avenue overcrossing would be removed and a new wider and longer structure would be constructed. The new structure would be 209-ft long (63.9 m) by 44 feet wide (14.62 m) versus 147-feet (45 m) long by 32-feet (10.36 m) wide for the existing. The new structure would still be a two-lane road facility, but would include 6-foot (1.83 m) sidewalks on each side (versus the existing 5-foot sidewalks) and new 5-foot (1.52 m) bike lanes would also be included in the new bridge design where currently none exist. Retaining walls would be constructed approximately 12-feet from the edge of the shoulder along the highway. A roadside barrier would be placed 7 feet from the edge of roadway and the area between the wall and the barrier would be buried in a slope. This would hide a large portion of the proposed retaining wall. A new sound wall would be constructed along the right-of-way line at the top of the slope along the north side of the highway.

Beginning at approximately the Arana Gulch Creek (3A branch, west of the main channel) crossing of the highway immediately west of La Fonda Avenue and continuing to the main

Arana Gulch channel near the Soquel Avenue southbound off-ramp, the existing pavement would be widened in both directions of the highway. Retaining walls would be constructed along the highway to reduce the impacts to the existing Arana Gulch channels, although these walls would not be visible to the highway traveler and would most likely be partially screened from the adjacent neighborhoods by the vegetation associated with the creek channels. It is expected that some of the existing vegetation along the creeks that is nearest the highway (and within the right-of-way) would be removed as part of construction. The existing vegetation along the northbound side of the highway from the Arana Gulch westward towards Morrissey Boulevard interchange would be removed to construct the new sound wall. Many of the tallest “skyline” trees along the corridor are not within the highway right-of-way and would not be affected by this project.

The removal of existing vegetation along the highway, which currently buffers the neighborhoods/highway and adds a high degree of vividness, would reduce the overall visual quality of the corridor. In addition, new sound walls would increase the “hardscape” within the corridor and give the Arana Gulch Landscape Unit a more urban feel. In select locations where the depth of the existing stand of trees within the creek channels is extensive, the change to the visual environment is not anticipated to be substantial because the skyline trees associated with the creeks would continue to dominate the horizon. However, most trees located within the Caltrans right-of-way would be removed in the Arana Gulch Landscape Unit, reducing the visual quality of this unit.

The implementation of this project would include the addition of sound walls along long stretches of the northbound lanes. In some locations, these walls would be located immediately adjacent to the roadway lanes, while in other locations the walls can be set back with the possibility that landscape mitigation would be included as part of the design.

The changes to the visual environment within the Arana Gulch Unit are anticipated to be more noticeable than in the Santa Cruz Unit, because this unit has not had the construction clearing that affected portions of the Santa Cruz unit. The existing high vividness of the Arana Gulch Landscape Unit would be lowered to moderate without mitigation. With mitigation the proposed improvements would likely have a moderately high vividness. The large number of skyline trees anticipated to remain in the Arana Gulch area outside of the right-of-way is the primary reason for the relative minor fluctuation in the vividness of the unit. Both the intactness and unity would be reduced from moderately high to moderately low without mitigation, and to moderate with mitigation due to the remaining skyline trees along with the new plantings along the northbound lanes

4.4 ANALYSIS OF KEY VIEWS

The findings presented in this study are based on review of the entire length of the project and its surroundings. The project is assessed from stationary locations as well as from dynamic viewpoints such as vehicles, pedestrians and bicyclists. However because it is not possible to analyze every possible view within the project area, the Federal Highway Administration analysis methodology recommends the selection a number of key viewpoints that represent the potential visual effects of the project and the viewers' experience. The key viewpoints selected for this project represent views from each of the two landscape units. The key viewpoints include a representation of all of the critical visual elements of the proposed project and viewer group-types. Descriptions of the key viewpoints are provided below. Locations of the key viewpoints for each landscape unit can be seen in Figure 8 in Section 3 of the report.

The post-construction simulations shown for the key views on the following pages include mitigation measures as described in Section 5 of this report, to the extent feasible given each particular view. The most noticeable of these shown in the simulations include:

- Grading to minimize wall heights.
- Applying architectural detailing to the retaining walls and sound walls, including textures, colors, and patterns;
- Color and staining or bridge elements
- Vinyl-coated chain-link fencing along pedestrian areas
- Save and protect as much existing vegetation as feasible;
- Include new landscaping where feasible;
- Include skyline trees in the new plantings;

Aesthetic treatments shown on structures and specific plant types in the simulations are representative only. Actual types of treatments and landscaping would be based on community input. For views and viewpoint locations, refer to Figure 8 in Section 3. The Key Views within the project area are:

- **Viewpoint #7, from the La Fonda Avenue overcrossing looking northbound towards the Morrissey Boulevard Bridge.** This viewpoint is within the Arana Gulch Landscape Unit looking toward the Santa Cruz Landscape Unit. The view was selected to show the extent of visual change proposed along the highway mainline as seen from this local road as it crosses over the Highway 1. This location would

provide the greatest visibility of the changes to the highway itself as seen from a local roadway.

- **Viewpoint #9, From the residential area north of Highway 1 looking north towards the La Fonda Avenue overcrossing.** This view is within the Arana Gulch Landscape Unit. This viewpoint shows how the project would affect the La Fonda Bridge in terms of its proposed features and scale, and as seen from the neighborhood perspective.
- **Viewpoint #10, From Highway 1, east of the La Fonda Avenue overcrossing looking northbound towards the Morrissey Boulevard Bridge.** This viewpoint is in the Arana Gulch Landscape Unit. The view was selected to show how the highway traveler would experience the project travelling north in the vicinity of the La Fonda Avenue overcrossing.
- **Viewpoint #11, From Highway 1, east of the La Fonda Avenue overcrossing looking southbound toward Soquel Drive.** This viewpoint is within the Arana Gulch Landscape Unit. The view from this location shows how the project would affect views along the highway as seen from the southbound direction of travel.

4.4.1 Viewpoint #7, from the La Fonda Avenue overcrossing looking northbound towards the Morrissey Boulevard Bridge.

A photograph of the existing conditions and a simulation of the proposed improvements are shown in Figure 9.

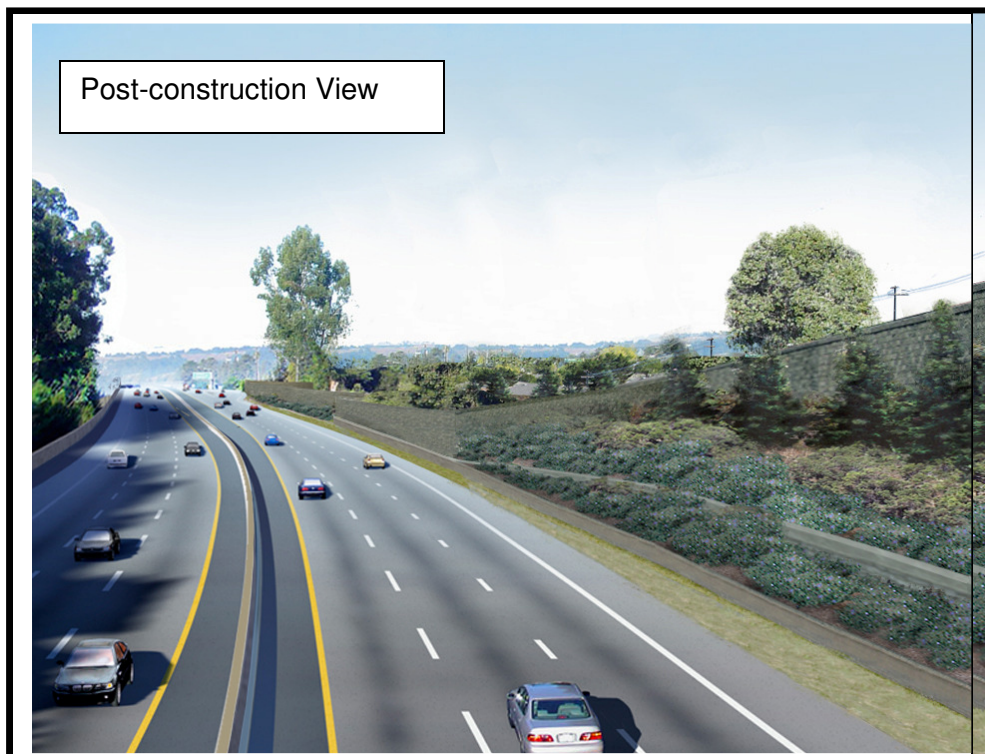
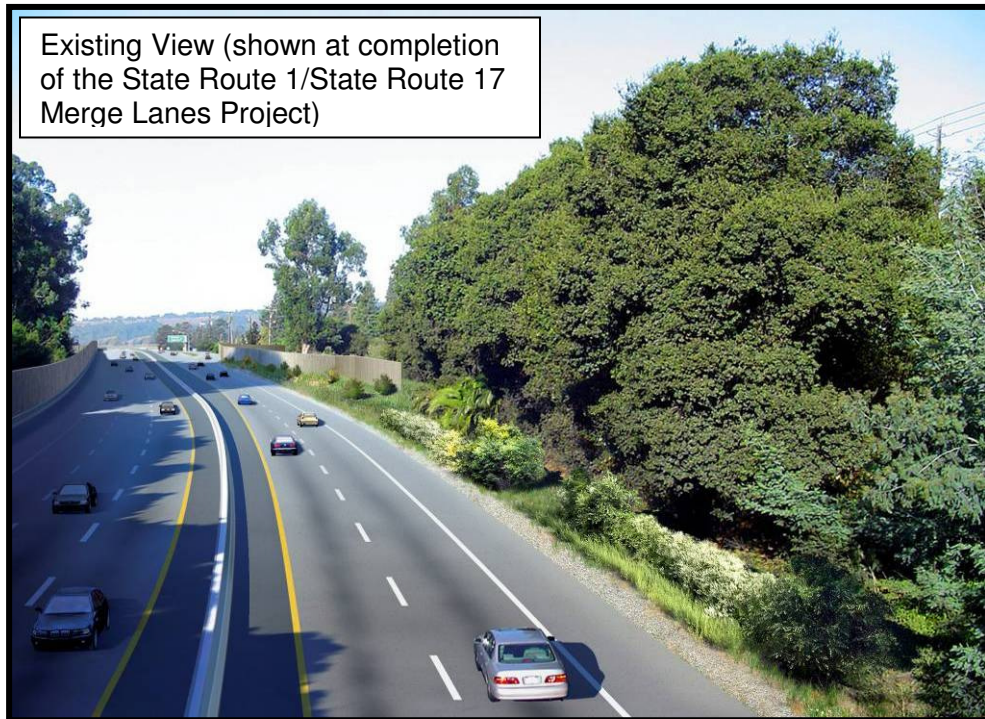
- **Orientation:** The photograph is taken from the La Fonda Avenue overcrossing over Highway 1 looking to the west toward the Morrissey Boulevard overcrossing. The view is from the perspective of a pedestrian on the sidewalk.
- **Existing Visual Character/Quality:** The overall existing visual quality of the area shown in the photograph is moderately high, with moderately high vividness, moderate intactness and moderate unity. The highway presents a uniform, monolithic appearance and the vegetation on the outside of the facility provides a generally vegetated character and screens the adjacent land uses from the highway.
- **Proposed Project Features:** The new lane and wider pavement section associated with the roadway would be visible to those looking into the corridor from the bridge. New sound and retaining walls would be seen along both the north and south edges of

the highway. A new vegetated slope would be created between the concrete barrier and the retaining wall. Above the retaining walls, landscaping would be used to block views of the sound walls and to soften the urban feel of the corridor.

- **Changes to Visual Character/Quality:** The construction of new walls and pavement widening would increase the overall hard surfaces of this portion of the corridor. Vegetation would be removed by construction activities, but there are opportunities for re-plantings. Visibility of the retaining wall to the right would be reduced by the creation of a new landscaped slope. Unmitigated, the anticipated overall visual quality in the view is anticipated to be moderately low, with moderately low vividness, low intactness and low unity. With proposed landscaping, the highway corridor within the viewshed would maintain much of its current overall moderate visual quality; with moderate vividness, intactness and unity.
- **Anticipated Viewer Response:** The removal of vegetation and the addition of hard surfaces would give an increasingly urban feel to the corridor. For residents with property along the right-of-way, views to the corridor would be blocked by new sound walls, where in the past these were screened by a combination of fencing and vegetation. Proposed retaining walls below the roadway would not be seen by the highway travelers. Local roadway users on the La Fonda Avenue overcrossing would have views into the highway corridor while on the bridge, with pedestrians and bicycle travelers having longer to view the changes in the highway corridor.
- **Resulting Visual Impact:** The initial resulting impact for highway travelers and viewers on the La Fonda Avenue overcrossing is expected to be very noticeable due to the increase in walls and the loss of vegetation. For residents adjacent to the highway, views into the highway corridor would be blocked by the new walls where previously they were screened by vegetation. New landscaping including trees, shrubs, groundcovers and vines would over time re-establish much of the vegetative character of this view. Appropriate architectural treatments would further minimize the potential urbanizing affect of the walls. New plantings along the walls would soften the walls' appearance, and in combination with other planting and architectural treatments would lead to a moderate visual quality with moderate vividness, intactness and unity.

Figure 9

**Viewpoint #1, from the La Fonda Avenue overcrossing looking northbound towards the Morrissey Boulevard bridge (Arana Gulch/Santa Cruz Landscape Units)
Shown with mitigation at approximately 5 years post-construction. Aesthetic treatments shown on structures and specific plant types are representative only. Actual types of treatments and landscaping would be based on community input.**



**Figure 9:
Viewpoint #7**

4.4.2 Viewpoint #9, From the residential area north of Highway 1 looking south towards the La Fonda Avenue overcrossing

A photograph of the existing conditions and a simulation of the proposed improvements are shown in Figure 10.

- **Orientation:** This photo was taken north of the La Fonda Avenue overcrossing looking to the south across the overcrossing.
- **Existing Visual Character/Quality:** The overall existing visual quality of the area shown in the photograph is moderate to moderately high, based primarily on the mature vegetation in the area, with moderately high vividness and moderate intactness and unity. The plantings along the right-of-way reduce visibility of the highway and bridge elements.
- **Proposed Project Features:** The La Fonda Avenue overcrossing would be replaced with a wider structure. The new structure would be 209-ft long (63.9 m) by 48 feet wide (14.62 m) versus 147-feet (45 m) long by 34-feet (10.36 m) wide for the existing. New sound walls would be located along the right-of-way line (at the top of the slope) and retaining walls, not visible in this view, would be located along the highway.
- **Changes to Visual Character/Quality:** The new sound walls would block the views to and from the highway, similar to what is currently achieved by vegetation. Between the sound walls at the top of the slope and the retaining wall at the base, it is anticipated that most of the existing vegetation would be removed by construction activities. New landscaping is proposed for much of the disturbed area, including trees, shrubs, and groundcovers. Additional planting in the form of vines on both the neighborhood and highway sides of the sound walls, and highway plantings on the remaining slope on the highway side would soften the impact of the new walls and retain much of the vegetative character as seen from this neighborhood viewpoint.
- **Anticipated Viewer Response:** Residents would notice a substantial change to the visual environment. The removal of mature vegetation and its replacement with walls and new plantings would alter the existing image into one that would appear more urban than the current view. Local roadway travelers on Oak Street which parallels the new sound wall would have views between existing houses and neighborhood landscaping to the areas affected by the new sound wall and the removed vegetation. Travelers on La Fonda Avenue would experience the new, wider bridge

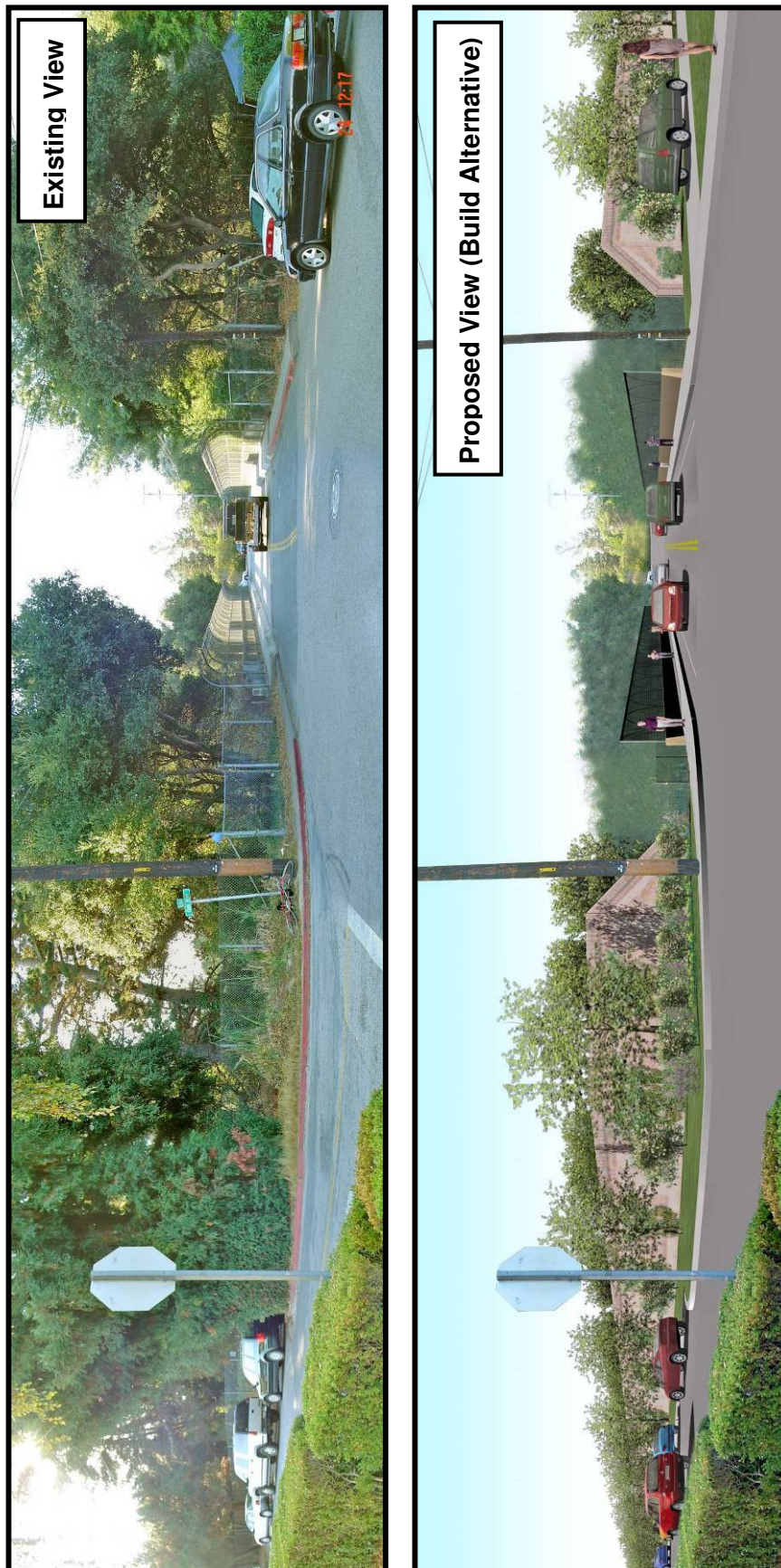


Figure 10: Viewpoint #2 From the residential area north of Highway 1 looking south towards the La Fonda Avenue overcrossing Arana Gulch Landscape Aesthetic treatments shown on walls and specific plant types are representative only. Actual types of treatments and landscaping would be based on community input. Unit, looking south across the La Fonda Avenue Bridge. Shown with mitigation at 5 years post-construction

Figure 10:
Viewpoint #2

and would have quick views into the highway corridor below. Bicyclists and pedestrians would have a longer view time into the corridor partly because of the proposed sidewalk and bicycle lanes on new structures.

- **Resulting Visual Impact:** The anticipated resulting impact would be to lower the overall quality from moderately high to moderately low immediately after construction with moderately low vividness and intactness, and moderate unity. The change would be a result of the larger scale bridge structure, introduction of sound walls, and the removal of screening vegetation. Although the bridge structure would remain visible, appropriate architectural treatments would help it fit with the community character. Proposed landscaping including vine plantings, shrubs and trees would, over time reduce the noticeability of the wall elements and the overall visual rating is anticipated to be at moderate, with moderate vividness, intactness and unity, given mitigation and time for the landscaping to mature.

4.4.3 Viewpoint #10, From Highway 1, east of the La Fonda Avenue overcrossing looking northbound toward the Morrissey Boulevard bridge.

A photograph of the existing conditions and a simulation of the proposed improvements are shown in Figure 11.

- **Orientation:** The photograph is taken from the northbound lanes of Route 1, east of the La Fonda Avenue overcrossing. The view is to the west toward Morrissey Boulevard.
- **Existing Visual Character/Quality:** The existing visual quality of the area shown in the photograph is moderate. The mature trees and shrubs along the roadsides contribute to the overall vegetated appearance of the view, and also provide screening of the adjacent land uses from the highway. The highway lanes and median barrier present a uniform, monolithic appearance. The La Fonda Avenue Bridge structure and signage somewhat distract from the overall vegetative quality of the view.
- **Proposed Project Features:** New sound and retaining walls would be seen along the northbound side of the highway. The slope rising up from the highway along the eastbound roadside would also be visible. A new vegetated slope would be created between the concrete barrier and the retaining wall along the northbound lanes. New landscaping would be incorporated along both sides of the highway. Landscaping would be placed between the retaining wall and sound wall along the northbound roadside, and on the new slope along the southbound lanes. Proposed landscaping would include trees, shrubs, groundcover, and vines on the walls.

- **Changes to Visual Character/Quality:** The construction of new walls and pavement widening would increase the overall hard surfaces of this portion of the corridor. The majority of the existing vegetation would be removed by construction activities, but after construction, much of the planting would be replaced. Existing views from the highway outward to the community are mostly screened by vegetation and landform. After project construction, views to the community would remain limited, due mostly to the new walls, new landscaping and topography. Over time, with the proposed landscaping and aesthetic wall treatments, the highway corridor within this viewshed would maintain much of its vegetated character, as well as its current overall moderate visual quality, with moderate vividness, intactness and unity.
- **Anticipated Viewer Response:** The removal of vegetation and the increase in hard surfaces would give an increasingly urban feel to the corridor. Because of the noticeable change, it is anticipated that viewers familiar with the area would have a moderately high sensitivity to changes in the visual environment. However as seen by many casual observers traveling Highway 101, the elements proposed by this project would be consistent with what is expected within a highway corridor.
- **Resulting Visual Impact:** The initial resulting visual change for highway travelers as seen from this viewpoint is expected to be very noticeable due to the increase in hard surfaces and walls, combined with loss of vegetation. It is anticipated that the unmitigated visual quality would drop to low, with moderately low vividness, low intactness, and low unity. Viewer sensitivity for many highway users would also be considered moderately high. The degree of visual change combined with viewer sensitivity would result in a visual impact rating of moderately high. Although the short-term changes would be quite noticeable, with time new plantings along the highway would mature and provide much of the vegetative character and screening benefits of the existing conditions.

Figure 11

Viewpoint #3, From Highway 1, east of the La Fonda Avenue overcrossing looking northbound toward the Morrissey Boulevard bridge. (Arana Gulch Landscape Unit) Shown with mitigation at approximately 5 years post-construction. Aesthetic treatments shown on structures and specific plant types are representative only. Actual types of treatments and landscaping would be based on community input.



**Figure 11:
Viewpoint #3**

4.4.4 Viewpoint #11, From Highway 1, east of the La Fonda Avenue overcrossing looking southbound toward Soquel Drive.

A photograph of the existing conditions and a simulation of the proposed improvements are shown in Figure 12.

- **Orientation:** The photograph is taken from the southbound lanes of Highway 1, just east of the La Fonda Avenue overcrossing and is looking to the east toward Soquel Drive.
- **Existing Visual Character/Quality:** The existing visual quality of the area shown in the photograph is moderate. Similar to the other viewpoints along this section of the highway, the mature trees and shrubs along the roadsides provide a well-vegetated appearance, and also provide screening of the adjacent land uses. The highway lanes and median barrier present a uniform, monolithic appearance.
- **Proposed Project Features:** The slope rising up from the highway along the eastbound roadside would be primarily visible from this vantage point. New retaining and sound walls would be seen across the highway along the northbound roadside. New landscaping would be incorporated along both sides of the highway. A new vegetated slope would be created between the concrete barrier and the retaining wall along the northbound lanes. Landscaping would be placed between the retaining wall and sound wall along the northbound roadside, and on the new slope along the southbound lanes. Proposed landscaping would include trees, shrubs, groundcover, and vines on the walls.
- **Changes to Visual Character/Quality:** It is anticipated that, left unmitigated, the overall visual quality would be moderately low, with moderately low vividness, low intactness, and low unity. The construction of new walls and pavement widening would increase the overall hard surfaces of this portion of the corridor. Much of the existing vegetation would be removed by construction activities, but after construction, much of the planting would be replaced. Many of the existing skyline trees seen from the highway are not on highway right-of-way and would remain. Existing views from the highway outward to the community are mostly screened by vegetation and landform. After project construction, views to the community would remain limited, due mostly to the new landscaping and topography. Over time, with the proposed landscaping and aesthetic wall treatments, the highway corridor within this viewshed would maintain much of its vegetated character, as well as its current overall moderate visual quality, with moderate vividness, intactness and unity.

- **Anticipated Viewer Response:** Similar to the other views along the highway, the removal of vegetation and the increase in hard surfaces would give a somewhat increasingly urban feel to the corridor. Because of the noticeable change, it is anticipated that viewers familiar with the area would have a moderately high sensitivity to changes in the visual environment. However as seen by many casual observers traveling Highway 101, the elements proposed by this project would be consistent with what is expected within a highway corridor.
- **Resulting Visual Impact:** The initial resulting visual change for highway travelers as seen from this viewpoint is expected to be moderately high due to the increase in hard surfaces and walls, combined with loss of vegetation. Viewer sensitivity for many highway users would also be considered moderately high. The degree of visual change combined with viewer sensitivity would result in a visual impact rating of moderately high. Although the short-term changes would be quite noticeable, with time, new plantings along the highway would mature and provide much of the vegetative character and screening benefits of the existing conditions.

Figure 12

Viewpoint #4, From Highway 1, approximately 300 feet east of the La Fonda Avenue overcrossing looking southbound toward Soquel Drive. (Arana Gulch Landscape Unit) Shown with mitigation at approximately 5 years post-construction. Aesthetic treatments shown on structures and specific plant types are representative only. Actual types of treatments and landscaping would be based on community input.



4.5 SHORT TERM VS. LONG TERM IMPACTS

As the name implies, short term impacts are of relatively short duration – the visual presence of construction equipment, or the time for establishment of new plants, for example. Long term impacts are those that are either permanently visible to the corridor, such as new retaining or sound walls without plantings, or those impacts that take much longer to achieve full mitigation –the length of time required for new plantings to reach maturity, for example.

Short term impacts of the Build Alternative include the visual presence of construction equipment, temporary roadside barriers, and construction signage. A temporary bridge is proposed adjacent to the existing La Fonda Bridge to accommodate traffic across the highway during the demolition and construction of the new overcrossing. The addition of this bridge would add to the amount of clearing in the area.

As part of the work, much of the existing mature vegetation within the right-of-way would be removed. Substantial landscaping is proposed as part of the project. New plantings can be expected to become established in their new location within a one to three year time frame. During this time, new top growth to the leaves and branches would be less while the plants put on more root growth. After establishment, the new plantings should start to achieve their standard growth rates for their species.

Effective screening of sound walls by vegetation could reasonably be expected to take up to 10 years, depending on the plantings densities, spacing of new plants, and depth of area of planting, with deeper planting areas likely achieving screening sooner. Shrubs and vines could be expected to mature sooner given their smaller size, whereas new tree plantings would mature later depending on the individual species. Other long term impacts include the new roadway elements, walls and bridge designs that would become new visual elements within the corridor.

Long term impacts include the new roadway elements and the bridge that would be unable to be screened and would become new visual elements within the corridor.

Table 4.1
Summary of Anticipated Viewer Sensitivity per Key Viewpoint

View No.	LANDSCAPE UNIT	VIEWER GROUPS			
		Freeway Travelers	Residents	Local Street Travelers	Harbor High School
7	Santa Cruz / Arana Gulch	Moderate	High Views from the La Fonda Bridge into the corridor likely for residents.	Moderate	Low No views from the High School property into this area of the corridor.
9	Arana Gulch	Moderate	High Views from homes to bridge area	High Views from the local streets to the project area	Moderate
10	Arana Gulch	Moderate	Moderate ¹	Low Local Street Travelers do not have these views	Moderate ¹
11	Arana Gulch	Moderate	Moderate ¹	Low Local Street Travelers do not have these views	Moderate ¹
1. These views represent views for travelers on the corridor. Residents and High School users would have these views when on the corridor only.					

Table 4.2
Summary of Visual Quality Change per Key Viewpoint

			FHWA Visual Assessment Criteria ⁵									OVERALL VISUAL QUALITY ⁴		
View No.	LANDSCAPE UNIT	PRIMARY PROJECT ELEMENTS	VIVIDNESS			INTACTNESS			UNITY					
			Existing ¹	w/o Mitigation ²	With Mitigation ³	Existing ¹	w/o Mitigation ²	With Mitigation ³	Existing ¹	w/o Mitigation ²	With Mitigation ³	Existing ¹	w/o Mitigation ²	With Mitigation ³
7	Santa Cruz / Arana Gulch	Construction of an additional outside lane in the northbound direction along with a 7 to 12 ft. unpaved strip beyond the shoulder (depending on location). Construction of a new overcrossing at La Fonda Avenue and retaining and sound walls within the La Fonda/Arana Gulch area.	5.3	3.4	4.4	4.2	2.4	3.9	4.2	2.2	3.7	4.56	2.67	4.00
9	Arana Gulch		5.0	3.2	4.2	4.4	3.1	4.2	4.2	3.6	4.7	4.53	3.30	4.37
10	Arana Gulch		4.4	3.2	4.2	3.8	2.1	3.6	3.2	2.1	3.5	3.80	2.46	3.76
11	Arana Gulch		4.8	3.2	4.2	3.9	2.2	4.0	3.9	2.1	3.8	4.20	2.50	4.00

1 – Visual Quality for existing view within the photograph

2 – Proposed project alternative without any mitigation

3 – Proposed (post-construction condition) with mitigation measures in place. Mitigation measures are described in Section 5 of this report.

4 – Overall Visual Quality = (vividness+intactness+unity)/3

5 – Visual Quality Rates: 1 = very Low Visual Quality, 4 = Moderate Visual Quality, 7 = Very High Visual Quality

Table 4.3
Summary of General Visual Quality Change by Landscape Unit

		FHWA Visual Assessment Criteria ⁵											
LANDSCAPE UNIT	PRIMARY PROJECT ELEMENTS	VIVIDNESS			INTACTNESS			UNITY			OVERALL VISUAL QUALITY		
		Existing ¹	w/o Mitigation ²	With Mitigation ³	Existing ¹	w/o Mitigation ²	With Mitigation ³	Existing ¹	w/o Mitigation ²	With Mitigation ³	Existing ¹	w/o Mitigation ²	With Mitigation ³
Santa Cruz	Construction of an additional outside lane in the northbound direction along with a 7 to 12 ft. (depending on location) unpaved strip beyond the shoulder. Construction of a new overcrossing at La Fonda Avenue and retaining and sound walls within the La Fonda/Arana Gulch area.	4.1	3.9	4.0	4.0	2.6	3.8	4.0	3.5	3.8	4.03	3.33	3.86
Arana Gulch		6.5	4.2	5.7	4.4	3.6	4.0	4.2	3.8	4.0	5.00	3.87	4.57
1 – General visual quality for landscape each landscape unit (as discussed in Section 3 of this report)													
2 – Proposed project alternative without any mitigation													
3 – Proposed (post-construction condition) with mitigation measures in place. Mitigation measures are described in Section 5 of this report.													
4 – Overall Visual Quality = (vividness+intactness+unity)/3													
5 – Visual Quality Rates: 1 = very Low Visual Quality, 4 = Moderate Visual Quality, 7 = Very High Visual Quality													

4.6 CUMULATIVE IMPACTS

A cumulative impact, as defined by the Council on Environmental Quality (CEQ), is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes such actions. CEQA Guidelines define cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The Build Alternative would be a continuation of many of the same design elements that were first introduced into the corridor by the State Route 1/State Route 17 Merge Lanes Project. Sound and retaining walls, wider pavement sections, and reduced planting areas from both the State Route 1/State Route 17 Merge Lanes Project and the proposed project combined would increase the built environment of the Highway 1 corridor.

The cumulative effect of these proposed projects within the Highway 1 corridor would cause a moderate change to the current appearance of the corridor. If these proposed projects limit their affects to the current Caltrans right-of-way, there would still be large numbers of skyline trees outside of the right-of-way along the corridor, which are primarily associated with the creeks, riparian corridors, and adjacent neighborhoods. However, it could be anticipated that large stretches of the corridor within the right-of-way would have much fewer plantings where currently plantings exist. Mitigation, in the form of community based architectural treatments and landscaping would help reduce the impacts and maintain a moderate degree of visual quality along the highway corridor.

5. Visual Mitigation

The following actions are recommended to address both the potential adverse visual impacts to the project area, as well as community concerns over the change of visual scale of the highway corridor. With the implementation of the following mitigation measures, the visual impacts of this project can be reduced and would not result in a substantial change in overall visual quality for the area:

Visual Mitigation Measure 1	
Mitigation Measure	Work with the community during preliminary and final design to provide opportunities for public input in developing architectural treatments to the bridge, walls and landscaping, and other project elements.
Time Frame for Application	Preliminary through final design effort.
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans, assisted by the City of Santa Cruz.
Possible Methods for Application	Develop construction and structure plans that direct the application of aesthetic treatments Develop construction plans that direct the application of landscape treatments

Visual Mitigation Measure 2	
Mitigation Measure	Work with the community during preliminary design to create and implement an Aesthetics and Landscape Design Guidelines for the project improvements through a formalized structure that allows for community input.
Time Frame for Application	During preliminary design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans, assisted by the City of Santa Cruz.
Possible Methods for Application	Conduct at least one community meeting or workshop in order to develop Design Guidelines.

Visual Mitigation Measure 3	
Mitigation Measure	Minimize the perceived visual scale of walls facing into the corridor as seen from State Route 1.
Time Frame for Application	During preliminary through final design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans, assisted by the City of Santa Cruz.
Possible Methods for Application	Use grading to reduce the visual height of the walls

Visual Mitigation Measure 4	
Mitigation Measure	Based on the Design Guidelines recommended in Visual Mitigation Measure 2, consider application of architectural detailing to the La Fonda Avenue bridge, including textures, colors, and other features.
Time Frame for Application	During preliminary through final design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans, assisted by the City of Santa Cruz.
Possible Methods for Application	Develop structure construction plans that direct the application of aesthetic treatments

Visual Mitigation Measure 5	
Mitigation Measure	Based on the Design Guidelines recommended in Visual Mitigation Measure 2, consider application of architectural detailing to the retaining walls, including textures, colors, and other features.
Time Frame for Application	During preliminary through final design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans, assisted by the City of Santa Cruz.
Possible Methods for Application	Develop construction plans that direct the application of aesthetic treatments Develop construction plans that direct the application of landscape treatments

Visual Mitigation Measure 6	
Mitigation Measure	Based on the Design Guidelines recommended in Visual Mitigation Measure 2 detail sound walls architecturally to be visually compatible with the adjacent community. As appropriate, incorporate architectural detailing, such as pilasters, wall caps, patterns, colors and textures.
Time Frame for Application	During preliminary through final design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans, assisted by the City of Santa Cruz.
Possible Methods for Application	Develop construction plans that direct the application of aesthetic treatments

Visual Mitigation Measure 7	
Mitigation Measure	Where retaining and sound walls are aligned adjacent to the right-of-way, adjust the design such that additional access-control fencing is not required. Do not create “dead space” between walls and fencing
Time Frame for Application	During preliminary through final design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans.
Possible Methods for Application	Develop construction plans that minimize space between walls and fencing as part of the final design plans.

Visual Mitigation Measure 8	
Mitigation Measure	Save and protect as much existing vegetation as feasible by surveying and locating existing trees and developing a preservation plan for preventing damage to trees to be protected during the construction.
Time Frame for Application	Preliminary through Final Design and Construction
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans.,.
Possible Methods for Application	<p>Survey exact locations for trees</p> <p>Analyze if wall alignments can be shifted or slope angles can be modified to preserve trees</p> <p>Do not allow storage of vehicles or materials within the drip zone of trees</p> <p>Use fencing during construction to protect trees from construction traffic or parking of vehicles under trees</p> <p>Protect the drip zone of isolated trees with fencing</p>

Visual Mitigation Measure 9	
Mitigation Measure	Include skyline trees in the new plantings to replace those removed by construction. Minimum mature height for the skyline tree species selected should be 50 feet.
Time Frame for Application	Preliminary through Final Design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans..
Possible Methods for Application	Develop landscape plans that include skyline trees.

Visual Mitigation Measure 10	
Mitigation Measure	Plant vines on both sides of sound walls to the greatest extent possible. Consider coring through sound walls if needed to encourage vine coverage where planting area is limited.
Time Frame for Application	Preliminary through Final Design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans, assisted by the City of Santa Cruz.
Possible Methods for Application	Develop landscape plans that include vines on both sides of retaining walls where feasible.

Visual Mitigation Measure 11	
Mitigation Measure	Utilize drainage and water quality elements, where required, that maximize the allowable landscape. Create required storm water features to appear natural and not engineered.
Time Frame for Application	Preliminary through Final Design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans, assisted by the City of Santa Cruz.
Possible Methods for Application	Place water quality/detention ponds out of important view corridor location to the greatest extent possible. Where feasible, use several smaller water quality ponds instead of one large pond to allow for landscaping around the pond to soften its imposition in the landscape Employ grading design of any ponds or swales that is sympathetic to the aesthetic and landscape master plan.

Visual Mitigation Measure 12	
Mitigation Measure	Landscape and revegetate disturbed areas to the greatest extent feasible. Landscaping should include appropriate irrigation.
Time Frame for Application	Preliminary through Final Design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans, assisted by the City of Santa Cruz.
Possible Methods for Application	Based on the Design Guidelines recommended in Visual Mitigation Measure 2, establish themes and planting styles for landscape areas Provide adequate irrigation to all landscape plantings.

Visual Mitigation Measure 13	
Mitigation Measure	A minimum 30 percent of the new trees should be planted from 15-gallon container stock
Time Frame for Application	Preliminary through Final Design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans.
Possible Methods for Application	Develop landscape plans that include a minimum 30 percent of the new trees planted from 15-gallon container stock.

Visual Mitigation Measure 14	
Mitigation Measure	Landscaping and irrigation should include establishment and a 3-year plant establishment period to assure on-going success of the plantings
Time Frame for Application	Preliminary through Final Design
Responsible Party	Santa Cruz Regional Transportation Commission and Caltrans.
Possible Methods for Application	Include 3 years of plant establishment as part of the construction contract.

6. References

1. Caltrans. 2006. Standard Environmental Reference, Environmental Handbooks, Volume 1: Guidance for Compliance, Chapter 27: Visual & Aesthetics Review, <http://www.dot.ca.gov/ser/> updated April.
2. Caltrans. 2008. Benefits of Scenic Highway Designation. http://www.dot.ca.gov/hq/LandArch/scenic/can_do.htm
3. Caltrans. 2008. Scenic Highway Guidelines, http://www.dot.ca.gov/hq/LandArch/scenic/guidelines/scenic_hwy_guidelines.pdf
4. Caltrans. 2002. *Route 1/17 Widening for Merge Lanes, Negative Declaration/Finding of No Significant Impact*, January.
5. City of Santa Cruz. 2006. City-wide Creeks and Wetlands Management Plan, <http://www.ci.santa-cruz.ca.us/>. February.
6. City of Santa Cruz. City Council Accepted Draft Goals and Policies. June 26, 2007. <http://www.ci.santa-cruz.ca.us/>
7. City of Santa Cruz. 2009 General Plan 2030 Administrative Draft February 27, 2009. <http://www.ci.santa-cruz.ca.us/>
8. City of Santa Cruz. 2006. Santa Cruz Municipal Code. http://nt2.scbbs.com/cgi-bin/om_isapi.dll?clientID=419592316&infobase=procode-1&softpage=Browse_Frame_Pg July.
9. City of Santa Cruz. 1994. Heritage Tree Ordinance. <http://www.ci.santa-cruz.ca.us/pr/parksrec/index.html>
10. County of Santa Cruz. 2006. Riparian Corridors Brochure. County of Santa Cruz Planning Department, <http://www.co.santa-cruz.ca.us/>.
11. County of Santa Cruz. 1994. General Plan. County of Santa Cruz Planning Department. http://www.sccoplanning.com/html/policy/general_plan.htm
12. County of Santa Cruz. June 24, 2008. County Code. <http://ordlink.com/codes/santacruzco/index.htm>
13. Design, Community & Environment. 2006 City of Santa Cruz Community Design Background Report. <http://www.co.santa-cruz.ca.us/>.

14. USDOT. 1988. Federal Highway Administration, Office of Environmental Policy, Visual Impact Assessment for Highway Projects, U.S. Department of Transportation, Washington D.C. March.

7. List of Preparers and Contributors

1. Jeffrey Lormand, Principal Landscape Architect, Parsons
2. Robert Carr, Landscape Architect, Caltrans
3. Indu Menon, Environmental Project Manager, Parsons
4. David Dillon, Graphic Artist, Parsons
5. Ronald Carbone, Graphic Artist, Parsons
6. Randy Carbone, Graphic Artist, Parsons
7. Ivy Tzur, Editing, Parsons